



# HEALTH OF BOSTON 2023

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THE PROVISIONAL MORTALITY AND LIFE EXPECTANCY REPORT

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## FOREWORD

Welcome to the Boston Public Health Commission's (BPHC) Health of Boston 2023: The Provisional Mortality and Life Expectancy Report. This is one of a series of reports providing surveillance data on the health of Boston. It aims to provide residents, medical and public health professionals, health policy makers, and community advocates with actionable information on the mortality of Boston residents. The report highlights trends in mortality including premature mortality (deaths to residents under age 65) and life expectancy by race/ethnicity, neighborhood, sex, and age. Data sources include the American Community Survey (ACS), the US Census and Massachusetts death registry.

Boston Public Health Commission acknowledges the role of racism in creating and perpetuating systems of oppression that undermine the social determinants of health and have resulted in the historic marginalization and subsequent inequities in health outcomes of Boston residents of color.

We hope you find the information presented here useful in your own efforts to educate, inspire, advocate, and intervene in the interest of optimal health for all Boston residents.



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## INTRODUCTION

Assessing patterns of death within a population offers important insight into the health and wellbeing of that population. Here we report on three key outcomes related to death: Section 1 - Premature Mortality (death before the age of 65 years); Section 2 – Mortality; and Section 3 - Life Expectancy (the average number of years a person of a given age can expect to live). Where possible we examine these outcomes among people of different ages, sexes, and race/ethnicity in the neighborhoods and census tracts in which they live.

### Premature mortality

Premature mortality is death that occurs before the expected or average age of death in a population (1). According to the National Center for Health Statistics (NCHS) Vital Statistics System, during 2015-2020 combined, the five leading causes of premature mortality in the US (as measured by years of potential life lost before age 65), were unintentional injury, cancer, heart disease, suicide, and infant mortality (death during the perinatal period) (2).

Prior to the pandemic, (i.e., not including COVID-19 related deaths), the US Centers for Disease Control and Prevention (CDC) estimated that each year, approximately 900,000 individuals in the US died prematurely from the five leading causes of death, and that between 20-40% of those deaths were preventable (3). Premature mortality is determined by many interconnected factors, including social and economic factors, health behaviors, access to and receipt of clinical care, characteristics within the physical environment, and genetics (4).

### Leading causes of death

Understanding the leading causes of death helps public health and medical professionals prioritize prevention, treatment, and research efforts to improve health, and ultimately increase life expectancy. In 2021, the ten leading causes of death in the US, in descending order, were heart disease, cancer, COVID-19, unintentional injuries, stroke, chronic lower respiratory diseases, Alzheimer's disease, diabetes, chronic liver disease and cirrhosis, and nephritis/nephrotic syndrome/nephrosis (5).

The COVID-19 pandemic may have affected how other leading causes of death ranked, as it impacted individuals' abilities to manage or access care for chronic diseases (6).



### **Social determinants of health**

Social determinants of health, including the conditions and environments where people are born, live, and work, significantly impact mortality. Specifically, income level, educational attainment, employment status, access to social and health services, and safe housing are all associated with mortality rates. A recent study found that US mortality trends across the ten leading causes of death among persons ages 25-74 from 2007-2017 were better for persons with more years of education (7). Specifically, there was a greater decrease in rates of cancer, heart disease, chronic lower respiratory diseases, and cerebrovascular diseases among persons with 16+ years of education. Further, there was a greater increase in death due to accidents, suicide, and chronic liver disease among persons with fewer than 15 years of education. Differences in mortality among urban versus rural populations have also been noted. Individuals living in rural areas are more likely to live in poverty and to be uninsured, and less likely to have access to healthy foods, health care, and other essential social services (8).

### **Racism and death**

Racism has had, and continues to have, a severe impact on the overall health and well-being of people of the color. In the US, centuries of discrimination, racist policies, and barriers to accessing resources and opportunities have resulted in significant inequities in health outcomes by race and ethnicity.

A growing body of evidence has found that all forms of racism, including structural, institutional and interpersonal racism, are associated with higher mortality and lower life expectancy among people of color compared to white individuals (9,10). Specifically, structural racism, defined as the totality of ways in which societies foster racial inequity through systems that reinforce discriminatory beliefs and values, limits access to resources essential for promoting health, such as income, housing, education and employment (11). Thus, structural racism is a root cause of health inequities.

Studies have also demonstrated how implicit and explicit bias, in addition to other forms of institutional racism within the healthcare system, influence access to care, quality of care, and health outcomes among people of color (12,13). In addition, recent reviews have provided evidence of negative health impacts resulting from exposure to interpersonal racism and discrimination (9).



### **COVID-19 and death**

According to the CDC, in 2021, COVID-19 was the third leading cause of death in the US, accounting for 416,893 deaths (5). It was also the fourth leading cause of premature death in 2020, accounting for 1,778,936 years of potential life lost before age 75 (2). COVID-19 mortality unevenly impacted communities of color in the US. Race/ethnicity is significantly associated with many underlying conditions known to increase the risk of COVID-19 infection, hospitalization, and death (14). As a result, data show significant differences in the death rate of COVID-19 across racial/ethnic groups when compared with non-Hispanic White persons.

A recent analysis found that compared with non-Hispanic White persons, non-Hispanic American Indian/Alaskan Native persons were 2 times, Hispanic/Latinx persons were 1.7 times, and non-Hispanic Black persons were 1.6 times as likely to die from COVID-19 (14). By contrast, non-Hispanic Asian persons were less likely to die from COVID-19. Death disparities have been observed to widen over the course of the pandemic. During times of surge, widened disparities indicate that people of color were disproportionately impacted by surges and new variants (15). Based on what is known about COVID-19 risk, this could be linked to higher rates of exposure due to place of work, limited access to protective supplies such as masks or hand sanitizer, lower vaccination rates, and less access to health services including testing and treatment.

While COVID-19 deaths have decreased since 2020, the pandemic remains an ongoing threat, as does the heightened risk of hospitalization and death.

### **Life Expectancy**

Life expectancy is a key measure used to assess overall population health. It is defined as the average number of years of life a person is expected to live and is dependent upon the rates of death across age groups. Determining life expectancy trends over time and comparing this measure between demographic or geographic groups is critical for the development of interventions to advance health equity.

Life expectancy in the US has fallen in recent years largely due to COVID-19 and drug overdose deaths. In 2020, US life expectancy was 77 and, in 2021, declined even further to just over 76 (16). This unprecedented drop in life expectancy represented the largest decrease over a two-year span since the influenza pandemic of 1918.

Life expectancy in Massachusetts tends to be higher than the national average and in 2019 was 80.4 (17). However, like the rest of the country, life expectancy in Massachusetts dropped in 2020. Still, there are significant and persistent gaps in life expectancy by race/ethnicity, county, and neighborhood across the state. Examination of these gaps on a local level in Boston reveal that disparities in life expectancy are linked to racial/ethnic health inequities. Health inequities



result from structural racism and historical and ongoing systems of oppression that drive poverty, poor housing, and low income in addition to limiting access and quality of healthcare.

Boston is a diverse city. Of the total population (654,776), 23.5% are Black, 50.1% White, 19.8% Latinx, 9.7% are Asian, and the remaining population is constituted of American Indian, Alaska Native, Pacific Islander, and people of two or more races (18). Despite the diversity of Boston, in part due to residential segregation, racial and ethnic groups are differentially concentrated across the 181 census tracts within 23 official neighborhoods that constitute Boston. Significant differences in life expectancy by race/ethnicity, neighborhood, and census tract were noted in a 2012 report produced by Virginia Commonwealth University (19). Much has changed demographically and structurally in Boston in the more than 10 years since the Virginia Commonwealth report was published. In this Health of Boston report, we update and examine inequities in life expectancy for the city of Boston by sex, race/ethnicity, neighborhood, and census tract.

## METHODS

This report presents data related to mortality among Boston residents from 2017 to 2021 derived mainly from the Massachusetts Resident Death files, Massachusetts Department of Public Health.

### Methods for Mortality and Premature Mortality

Mortality and premature mortality rates within this report were age-adjusted to permit comparisons that mitigate the impact of differences in age distributions of populations. The resulting comparisons allow consideration of observed differences in terms of factors other than population age differences.

For mortality comparisons, rate changes over time for the last five years (2017-2021) and rate differences between two demographic groups for the most recent year or time period were assessed statistically. Whether mortality rates increased or decreased was determined by assessing linear change across the entire five-year time period using Poisson regression ( $p < .05$ ).

Similarly, a rate for a given demographic group is described as higher or lower than the comparison group (i.e., reference group) only when the comparison test indicated statistical significance. When two rates were compared and the difference was not found to be statistically significant, the two rates are described as “similar” if mentioned in text. Demographic group differences for mortality and premature mortality were based on a comparison of single-year rates for the most recent data year, 2021. Some charts present data from multiple years to allow comparisons when there are fewer events on an annual basis.



Boston population data used as denominators in the rate calculations were produced internally by the BPHC Population Health and Research Boston Population Estimates Project (B-PEP). B-PEP uses 2010 and 2020 US Census data and 2019 American Community Survey data for Boston to generate population estimates for years between the 2010 and 2020 censuses via interpolation and extrapolation of age, race/ethnicity, sex, and neighborhood population change. For more information on B-PEP, please contact the BPHC Population Health and Research Office. Of note, B-PEP population estimates will be revised as the US Census Bureau releases further delineated 2020 population data.

Several cautions should be kept in mind when using data reported by race/ethnicity. Race and ethnicity are social constructs, not biological facts. There is often more genetic variation between members of the same race than between members of different races. In addition, the meanings of these designations are highly subject to historical, cultural, and political forces. Not only do these designations change over time, but there is also a very subjective element that influences who is considered a member of one group or another. The concept of race can be notably broad: the term “Black,” for example, includes people describing themselves as African American, African diaspora, or Caribbean, groups with distinct histories and differing health risks. Nevertheless, racial designations are useful in that they are nearly universally used by people in the United States to describe themselves, and they permit us to identify and address health inequities that exist across racial and ethnic groups.

For racial/ethnic group comparisons we used White residents, the largest group, as the reference group and assessed the difference between each non-White resident group rate (e.g., rate for Black residents) and the White resident (reference group) rate. For sex-based comparisons, males were the reference group. Neighborhood comparisons involved assessing the difference between a given neighborhood’s rate and the rate for the rest of Boston (those residents not living in the specified neighborhood). These comparisons are considered more accurate than comparisons to Boston overall.

Hispanic and/or Latinx people can be of any race. In this report, data for persons of Hispanic and/or Latin descent are described as Latinx and presented alongside non-Latinx racial groups. Boston-specific data by race and ethnicity is presented for non-Latinx Asian residents, non-Latinx Black residents, non-Latinx White residents, and Latinx residents of any race. Few sources have data in large enough counts to allow presentation of data about smaller groups such as the many ethnicities included under the category “Asian.” Additionally, small case numbers limit the ability to identify and describe health disparities for Indigenous people.

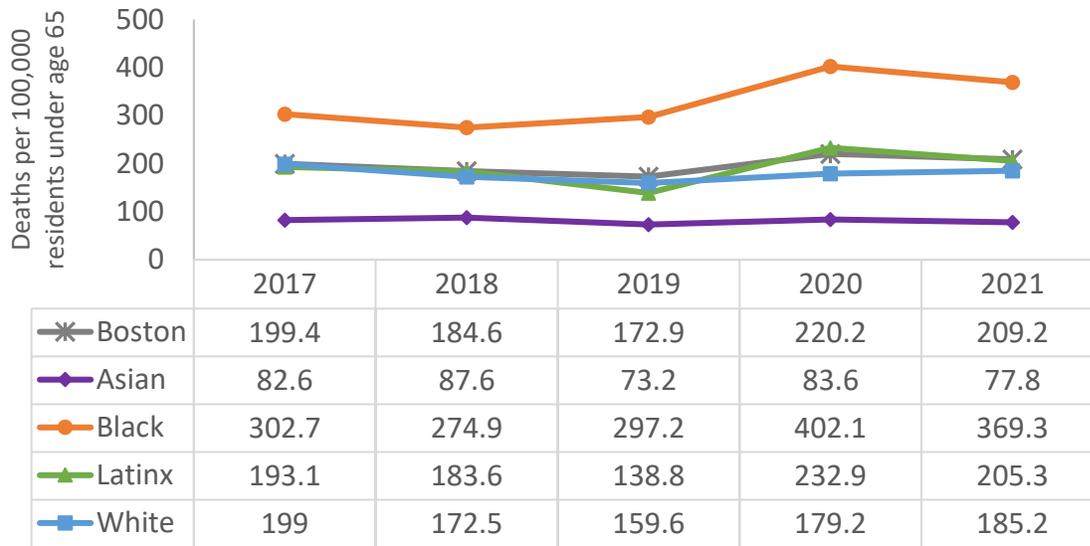


### **Methods for Provisional Life Expectancy**

Five years (2017-2021) of data was employed to calculate life expectancy for Boston overall, and for sex, race/ethnicity, and neighborhood. Seven years (2015-2021) of data was employed to calculate life expectancy for each of the 2010 census tracts. Population data was based on 2015-2021 ACS for 2015- 2021 and was cross walked to 2010 census tract. Death data for 2015-2021 was also geocoded to 2010 census tracts. Life expectancy calculations were performed in R using the Chiang II method. For additional information regarding the analytical methods used within this report, please contact the Boston Public Health Commission Population Health and Research Office at [populationhealth@bphc.org](mailto:populationhealth@bphc.org).

## SECTION 1. PREMATURE MORTALITY

**Figure 1. Premature Mortality<sup>†</sup> by Race/Ethnicity and Year, 2017-2021**



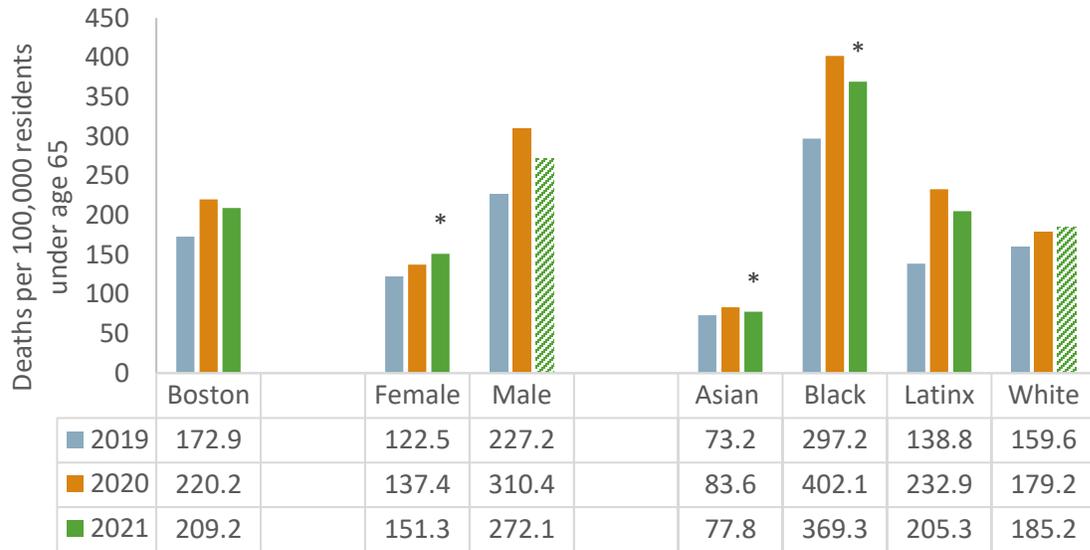
<sup>†</sup> Age-adjusted rates per 100,000 residents under age 65

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

Premature mortality is defined as deaths among residents under age 65 years. From 2017-2021, the age-adjusted premature mortality rate per 100,000 Boston residents increased by 12%.

Between 2017-2021, Black residents experienced a 37.3% increase in premature mortality. There was no significant change in the rate of premature mortality among Asian, Latinx, or White residents from 2017-2021.

**Figure 2. Premature Mortality<sup>†</sup> by Selected Indicators, 2019-2021**



\* Statistically significant difference when compared to reference group

<sup>†</sup> Age-adjusted rates per 100,000 residents under age 65

NOTE: Bars with hatch marks indicate the reference group within each selected indicator

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

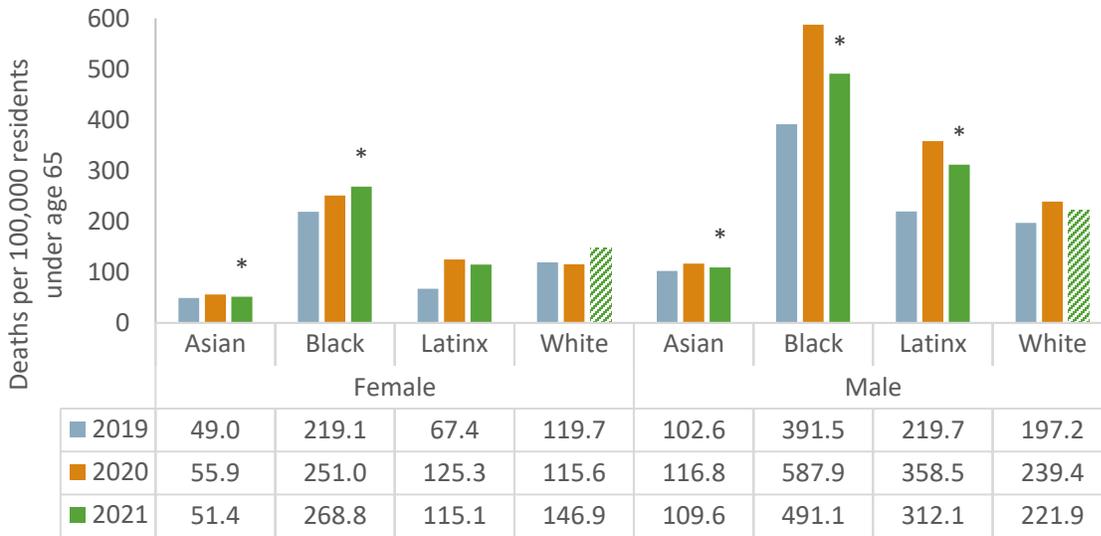
In 2021, the premature mortality rate in Boston was 209.2 deaths per 100,000 residents under age 65. Premature mortality was 57.1% lower for female residents (151.3) compared to male residents (272.1).

In 2021, the premature mortality rate was 80.4% lower for Asian residents (77.8) compared with White residents (185.2). Conversely, premature mortality was two times higher for Black residents (369.3) compared with White residents (185.2).

In all three years, premature mortality rates were highest among Black residents and lowest among Asian residents.

From 2019 to 2020, the age-adjusted premature mortality rate per 100,000 residents increased for male residents by 36.6%, Black residents by 35.3% and Latinx residents by 67.8%.

**Figure 3. Premature Mortality<sup>†</sup> by Sex and Race/Ethnicity, 2019-2021**



\* Statistically significant difference when compared to reference group

<sup>†</sup> Age-adjusted rates per 100,000 residents under age 65 years

NOTE: Bars with hatch marks indicate reference group

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

From 2019 to 2020, the age-adjusted premature mortality rate per 100,000 residents increased for Latinx female residents by 85.8%, Black male residents by 50.2%, Latinx male residents by 63.2%, and White male residents by 21.4%.

For Black male residents, the rate decreased from 2020 to 2021 by 16.5%. The rate increased by 27.0% for White female residents from 2020 to 2021.

In 2021, the age-adjusted premature mortality rate per 100,000 residents was 96.3% lower for Asian female residents (51.4) compared with White female residents (146.9). The rate for Black female residents (268.8) was 58.6% higher compared with White female residents.

The rate was 67.8% lower for Asian male residents (109.6) compared with White male residents (221.9). The rate for Black male residents (491.1) was 2.2 times the rate for White male residents. The rate for Latinx male residents (312.1) was 33.8% higher compared with White male residents.



**Table 1. Leading Causes of Premature Mortality by Year, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Cancer, 259 (45.6)	Cancer, 253 (43.3)	Accidents, 228 (38.1)	Accidents, 290 (49.1)	Accidents, 315 (52.9)
2	Accidents, 250 (43.2)	Accidents, 218 (38.7)	Cancer, 199 (33.7)	Cancer, 214 (35.2)	Cancer, 222 (36.8)
3	Heart disease, 178 (30.6)	Heart disease, 144 (24.4)	Heart disease, 165 (27.5)	Heart disease, 174 (28.7)	Heart disease, 176 (28.9)
4	Homicide, 55 (8.1)	Suicide, 51 (8.3)	Chronic Liver disease, 39 (7.0)	COVID-19, 111 (18.1)	COVID-19, 59 (9.7)
5	Diabetes, 32 (5.6)	Homicide, 50 (6.5)	Suicide, 37 (6.1)	Homicide, 52 (7.5)	Diabetes, 49 (8.4)
Cause of death, count (Age-adjusted rate per 100,000 residents under age 65)					

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

Cancer was the leading cause of premature mortality for Boston residents under age 65 in 2017 and 2018 and was replaced by accidents (i.e., unintentional injury deaths) from 2019-2021. Accidents include deaths due to an unintentional drug overdose.

Heart disease consistently ranked as the third leading cause of premature mortality from 2017-2021.

The first Massachusetts COVID-19 case was confirmed in early 2020. In 2020 and 2021, COVID-19 became the fourth leading cause of premature death in Boston.

Fourth and fifth leading causes of premature death also included homicide and suicide, diabetes, and chronic liver disease.



**Table 2a. Leading Causes of Premature Mortality by Year, Male Residents, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Accidents, 194 (69.6)	Accidents, 163 (59.9)	Accidents, 182 (62.3)	Accidents, 228 (79.9)	Accidents, 231 (80.2)
2	Cancer, 130 (48.2)	Cancer, 119 (42.5)	Heart disease, 118 (41.0)	Heart disease, 122 (42.0)	Heart disease, 118 (39.9)
3	Heart Disease, 120 (43.3)	Heart disease, 101 (35.7)	Cancer, 90 (31.1)	Cancer, 121 (41.3)	Cancer, 102 (34.1)
4	Homicide, 52 (15.7)	Homicide, 48 (12.9)	Homicide, 32 (10.1)	COVID-19, 75 (25.2)	Diabetes, 36 (12.8)
5	Suicide, 21 (6.5)	Suicide, 40 (13.5)	Suicide, 29 (9.7)	Homicide, 47 (13.8)	COVID-19, 32 (11.0)
Cause of death, count (Age-adjusted rate per 100,000 residents under age 65)					

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

Accidents (unintentional injury deaths including drug overdose deaths) remained the top leading cause of premature mortality for male Boston residents under age 65 from 2017-2021. Heart disease surpassed cancer in 2019 as the second leading cause of premature mortality for males, where it remained through 2021.

From 2017-2019, homicide and suicide were included in the top five leading causes of premature mortality for male residents (and homicide was included in 2020). COVID-19 emerged as the fourth and fifth leading causes of premature mortality for male residents in 2020 and 2021, respectively.



**Table 2b. Leading Causes of Premature Mortality by Year, Female Residents, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Cancer, 129 (43.4)	Cancer, 134 (44.2)	Cancer, 109 (36.2)	Cancer, 93 (29.7)	Cancer, 120 (39.5)
2	Heart disease, 58 (19.2)	Accidents, 55 (18.7)	Heart disease, 47 (15.2)	Accidents, 62 (20.5)	Accidents, 84 (27.3)
3	Accidents, 56 (18.4)	Heart disease, 43 (14.1)	Accidents, 46 (15.4)	Heart disease, 52 (16.6)	Heart disease, 58 (18.8)
4	Chronic lower respiratory diseases, 13 (4.7) §	Suicide, 11 (3.4) §	Chronic Liver disease, 19 (7.0) §	COVID-19, 36 (11.6)	COVID-19, 27 (8.5)
5	Diabetes, 13 (4.3) §	Perinatal, 9 (4.4) §	Cerebrovascular diseases, 12 (3.8) §	Diabetes, 16 (4.8) §	Chronic Liver disease, 22 (7.4)
Cause of death, count (Age-adjusted rate per 100,000 residents under age 65)					

§ Rates based on 20 or fewer cases and should be interpreted with caution

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

Cancer remained the top leading cause of premature mortality for female residents from 2017-2021. Heart disease and accidents (unintentional injury including drug overdose) ranked as either the second or third leading cause of premature mortality among female residents between 2017 and 2021. In 2020 and 2021 COVID-19 emerged as the fourth leading cause of premature mortality for female residents.

Between 2017 and 2021 other fourth and fifth leading causes of death for females included chronic lower respiratory diseases, diabetes, suicide, perinatal conditions, chronic liver disease, and cerebrovascular diseases.



**Table 3. Leading Causes of Premature Mortality by Race/Ethnicity, 2017-2021 Combined**

Rank	Asian	Black	Latinx	White
1	Cancer, 104 (36.7)	Cancer, 382 (57.2)	Accidents, 301 (56.7)	Accidents, 598 (47.0)
2	Heart disease, 26 (8.6)	Accidents, 344 (56.2)	Cancer, 134 (27.2)	Cancer, 492 (36.2)
3	Accidents, 24 (7.5)	Heart disease, 343 (51.9)	Heart disease, 96 (19.6)	Heart disease, 355 (26.0)
4	Suicide, 18 (3.6) §	Homicide, 152 (24.7)	Homicide, 54 (8.3)	Chronic liver disease, 110 (8.8)
5	Cerebrovascular disease, 10 (3.5) §	Diabetes, 98 (15.0)	COVID-19, 49 (9.8)	Suicide, 103 (8.0)
Cause of death, count (5-year average annual age-adjusted rate per 100,000 residents under age 65)				

§ Rates based on 20 or fewer cases and should be interpreted with caution

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

For 2017-2021 combined, cancer, accidents (i.e., unintentional injury including drug overdose), and heart disease were among the top three leading causes of premature mortality across all racial/ethnic groups presented.

Among Asian residents, cancer was the leading cause of premature death, followed by heart disease, accidents, suicide and cerebrovascular disease.

Among Black residents, cancer was the leading cause of premature mortality, followed by accidents, heart disease, homicide and diabetes.

Among Latinx and White residents, accidents were the leading cause of premature death, followed by cancer, and then heart disease. Fourth and fifth leading causes of premature mortality were homicide and COVID-19 for Latinx residents and chronic liver disease and suicide for White residents.



**Table 4a. Leading Causes of Premature Mortality by Race/Ethnicity, Males, 2017-2021 Combined**

Rank	Asian	Black	Latinx	White
1	Cancer, 55 (40.2)	Accidents, 261 (95.8)	Accidents, 254 (100.6)	Accidents, 441 (66.3)
2	Heart disease, 24 (17.5)	Heart disease, 215 (72.5)	Heart disease, 66 (29.7)	Heart disease, 265 (37.5)
3	Accidents, 20 (14.1) §	Cancer, 185 (60.9)	Cancer, 63 (29.0)	Cancer, 240 (34.0)
4	Suicide, 9 (3.9) §	Homicide, 140 (48.6)	Homicide, 49 (15.2)	Suicide, 78 (11.4)
5	Cerebrovascular diseases, 7 (5.0) §	Diabetes, 64 (22.2)	COVID-19, 34 (15.2)	Chronic liver disease, 68 (10.6)
Cause of death, count (5-year average annual age-adjusted rate per 100,000 residents under age 65)				

§ Rates based on 20 or fewer cases and should be interpreted with caution

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

During 2017-2021, accidents (i.e., unintentional injury including drug overdose) were the leading cause of premature death for Black male residents, Latinx male residents, and White male residents, followed by heart disease and cancer. For Asian male residents, cancer was the leading cause of premature death, followed by heart disease and accidents.

Fourth and fifth leading causes of premature mortality included suicide and cerebrovascular diseases for Asian male residents; homicide and diabetes for Black male residents; homicide and COVID-19 for Latinx male residents; and suicide and chronic liver disease for White male residents.



**Table 4b. Leading Causes of Premature Mortality by Race/Ethnicity, Females, 2017-2021 Combined**

Rank	Asian	Black	Latinx	White
1	Cancer, 49 (34.1)	Cancer, 197 (54.3)	Cancer, 71 (26.1)	Cancer, 252 (38.7)
2	Suicide, 9 (3.3) §	Heart disease, 128 (35.4)	Accidents, 47 (17.6)	Accidents, 157 (26.1)
3	‡	Accidents, 83 (24.4)	Heart disease, 30 (11.4)	Heart disease, 90 (13.8)
4	‡	Diabetes, 34 (9.4)	COVID-19, 15 (5.5) §	Chronic Liver disease, 42 (6.8)
5	‡	COVID-19, 31 (8.3)	Perinatal, 12 (4.2) §	Chronic lower respiratory disease, 28 (4.2)
Cause of death, count (5-year average annual age-adjusted rate per 100,000 residents under age 65)				

‡ Rates not presented due to small number of cases

§ Rates based on 20 or fewer cases and should be interpreted with caution

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

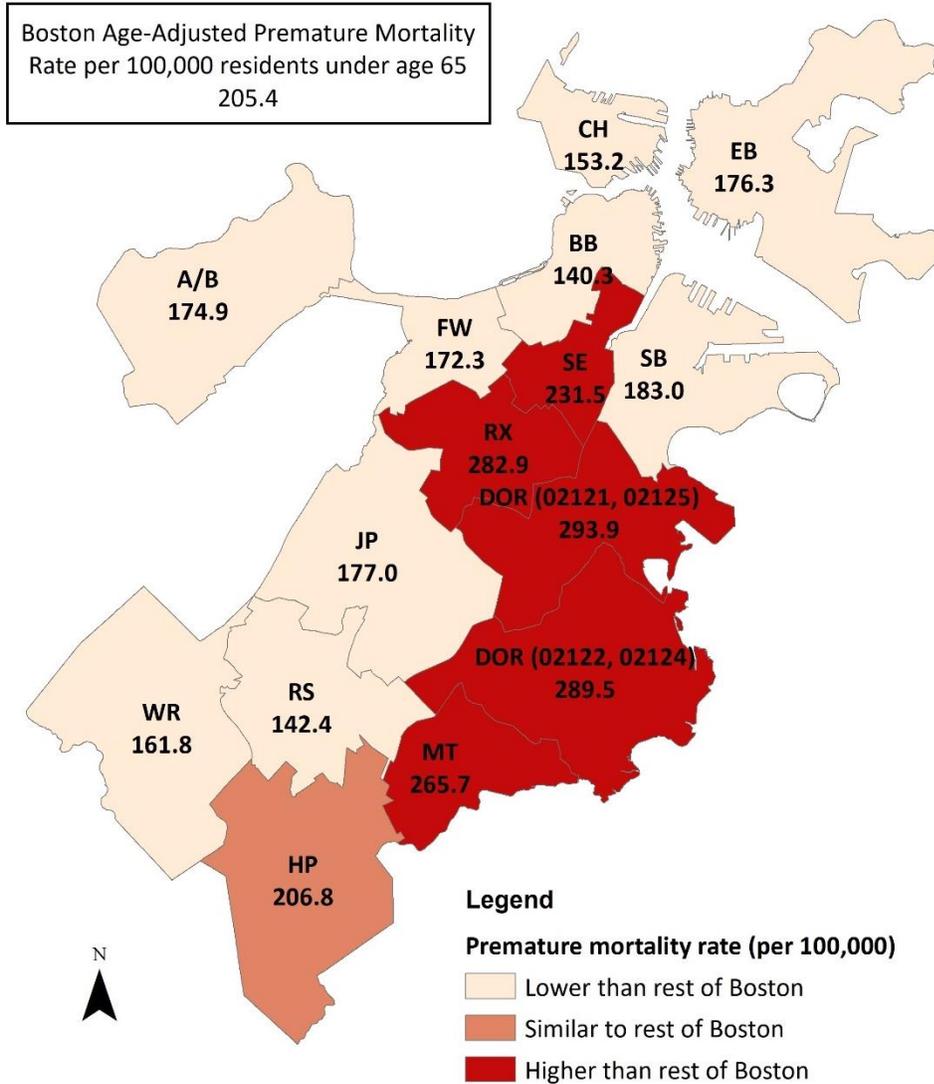
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

During 2017-2021, cancer was the leading cause of premature death for Boston females across all racial/ethnic groups presented.

Among Black female residents, Latinx female residents, and White female residents, heart disease and accidents (i.e., unintentional injury including drug overdose) were either the second or third leading cause of premature death. For Asian female residents, suicide was the second leading cause of premature death.

Fourth and fifth leading causes of premature mortality included diabetes and COVID-19 for Black female residents; COVID-19 and perinatal conditions for Latinx female residents; and chronic liver disease; and chronic lower respiratory disease; for White female residents.

**Figure 4. Age-Adjusted Premature Mortality by Neighborhood, 2017-2021 Combined**



DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

For 2017-2021, the age-adjusted premature mortality rate was higher in Dorchester (02121, 02125), Dorchester (02122, 02124), Roxbury, Mattapan, and the South End (231.5) compared with the rest of Boston. The rates were lower in Allston/Brighton, the Back Bay, Charlestown, East Boston, Fenway, Jamaica Plain, Roslindale, South Boston, and West Roxbury when compared with the rest of Boston.

**Table 5. Age-Adjusted Premature Mortality, Ranked in Descending Order, 2017-2021 Combined**

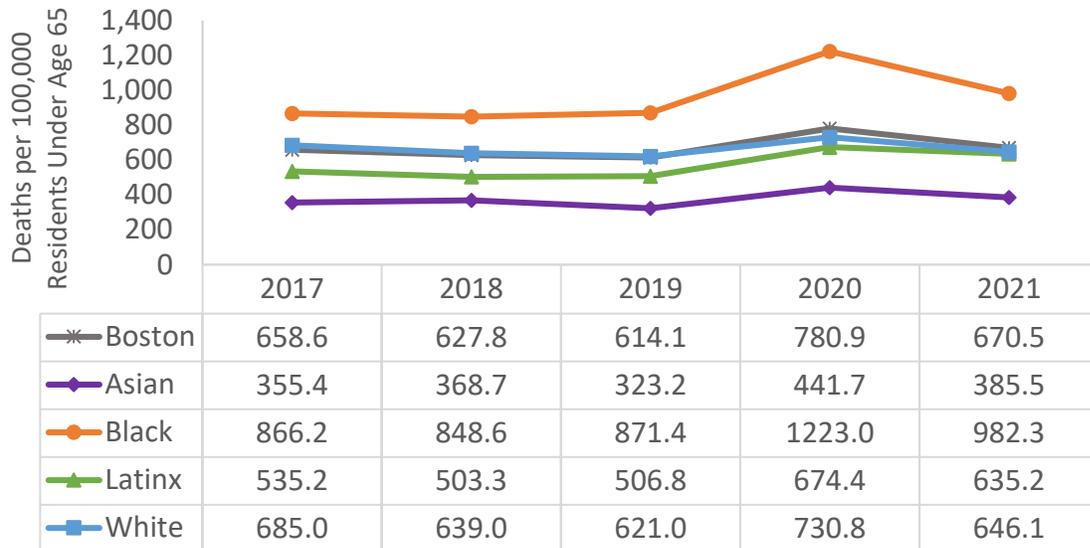
<b>Neighborhood, Associated ZIP Code(s)</b>	<b>Age-Adjusted Premature Mortality Rate</b>
Dorchester (DOR), 02121, 02125	293.9
Dorchester (DOR) 02122, 02124	289.5
Roxbury (RX), 02119, 02120	282.9
Mattapan (MT), 02126	265.7
South End (SE), 02111, 02118	231.5
Hyde Park (HP), 02136	206.8
South Boston (SB), 02127, 02210	183.0
Jamaica Plain (JP), 02130	177.0
East Boston (EB), 02128	176.3
Allston/Brighton (AB), 02134, 02135, 02163	174.9
Fenway (FW), 02115, 02215	172.3
West Roxbury (WR), 02132	161.8
Charlestown (CH), 02129	153.2
Roslindale (RS), 02136	142.4
Back Bay, Downtown, Beacon Hill, North End, West End (BB), 02108-02110, 02113-02114, 02116, 02199	140.3

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

For 2017-2021 combined, the neighborhoods with the highest age-adjusted premature mortality rates were Dorchester (02121, 02125) (293.9), Dorchester (02122, 02124) (289.5) and Roxbury (282.9). These rates were twice that of the lowest rates observed in Back Bay (140.3) and Roslindale (142.4).

## SECTION 2. MORTALITY

**Figure 5. All-Cause Mortality<sup>†</sup> by Race/Ethnicity and Year, Boston, 2017-2021**



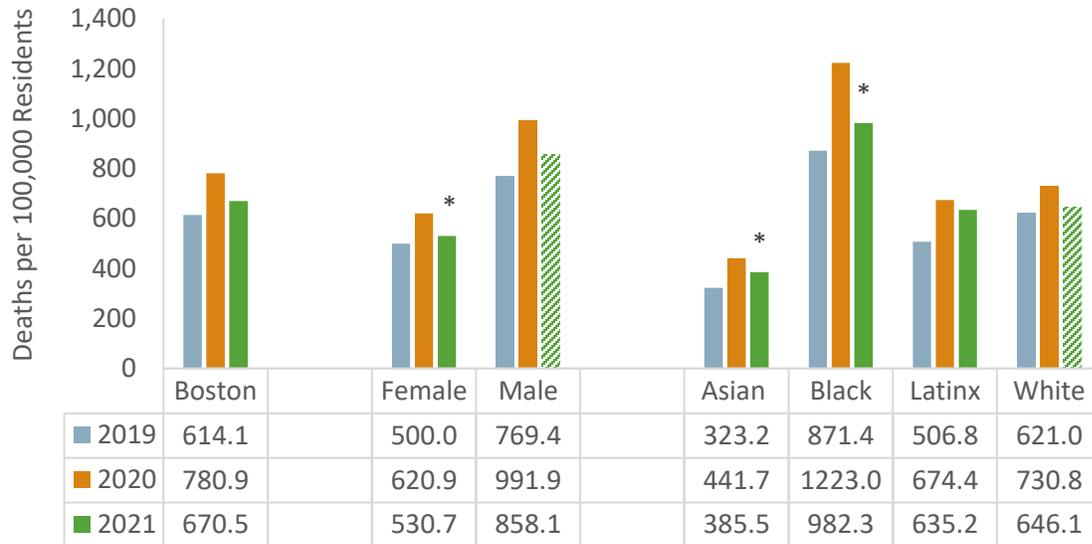
<sup>†</sup> Age-adjusted rates per 100,000 residents

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

In all 5 years from 2017-2021 all-cause mortality rates were highest among Black residents and lowest among Asian residents. The rates for White and Latinx residents were similar to that of Boston overall.

From 2017-2021, the age-adjusted all-cause Boston mortality rate per 100,000 residents increased by 11.1%. This increase was driven by a 28.9% increase for Black residents and a 29.9% increase for Latinx residents.

**Figure 6. All-Cause Mortality<sup>†</sup> by Selected Indicators, 2019-2021**



\* Statistically significant difference when compared to reference group

<sup>†</sup> Age-adjusted rates per 100,000 residents

NOTE: Bars with hatch marks indicate the reference group

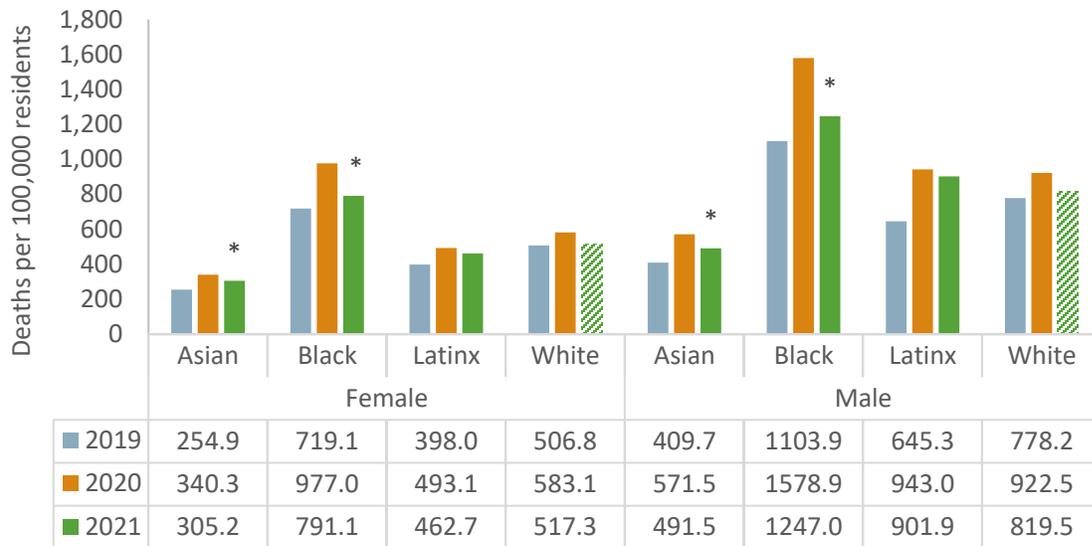
DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

From 2019 to 2020, the all-cause mortality rate per 100,00 residents increased by 24.2% for female residents, 28.9% for male residents, 6.7% for Asian residents, 40.3% for Black residents, 33.1% for Latinx residents, and 17.7% for White residents.

From 2020 to 2021, the rate decreased for all residents. Specifically the rate decreased by 14.5% for female residents, 13.5% for male residents, 19.7% for Black residents and 11.6% for White residents.

In 2021, the all-cause mortality rate in Boston was 670.5 deaths per 100,000 residents. The all-cause mortality rate was 38% lower for female residents (530.7) compared to male residents (858.1). The all-cause mortality rate was 40% lower for Asian residents (385.5) when compared with White residents (646.1). The all-cause mortality was 52% higher for Black residents (982.3) compared with White residents (646.1). There was no significant difference in the all-cause mortality rate between Latinx residents and White residents.

**Figure 7. All-Cause Mortality<sup>†</sup> by Sex and Race/Ethnicity, 2019-2021**



\* Statistically significant difference when compared to reference group

<sup>†</sup> Age-adjusted rates per 100,000 residents

NOTE: Bars with hatch marks indicate the reference group

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

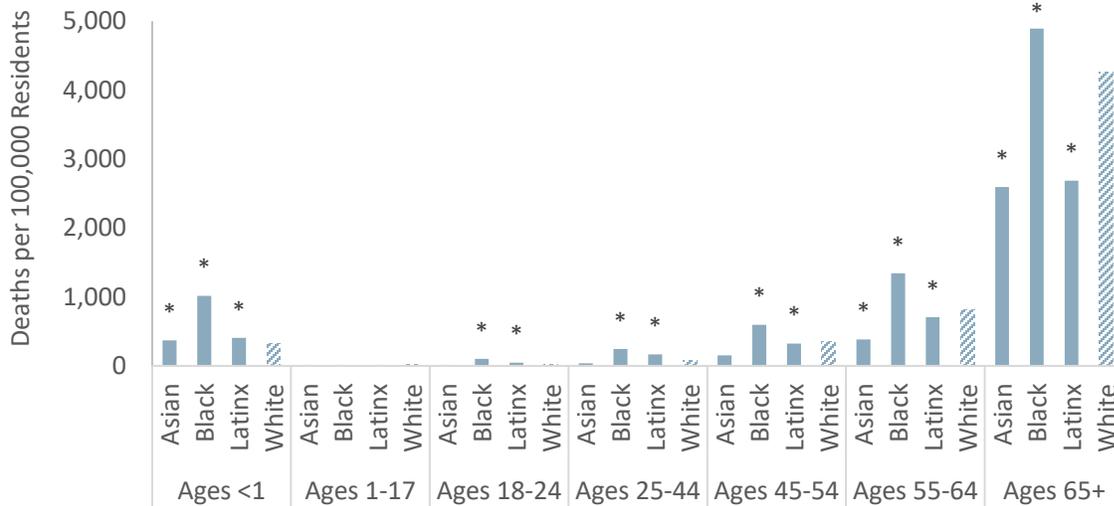
From 2019 to 2020, the all-cause mortality rate per 100,000 residents increased by 33.5% for Asian female residents, 35.9% for Black female residents, 23.9% for Latinx female residents, and 15.1% for White female residents. From 2020-2021, the rate decreased by 19.0% for Black female residents and 11.3% for White female residents.

From 2019 to 2020, the all-cause mortality rate per 100,000 residents increased by 39.5% for Asian male residents, 43.0% for Black male residents, 46.1% for Latinx male residents, and 18.5% for White male residents. From 2020 to 2021, the rate decreased by 21.0% for Black male residents and 11.2% for White male residents.

In 2021, the all-cause mortality rate per 100,000 residents was 41.0% lower for Asian female residents (305.2) compared with White female residents (517.3). The rate for Black female residents (791.1) was 52.9% higher than the rate for White female residents.

In 2021, the all-cause mortality rate per 100,000 residents was 40.0% lower for Asian male residents (491.5) compared with White male residents (819.5). The rate for Black male residents (1,247.0) was 52.2% higher than the rate for White male residents.

**Figure 8. All-Cause Mortality<sup>†</sup> by Age and Race/Ethnicity, 2017-2021 Combined**



\* Statistically significant difference when compared to reference group

<sup>†</sup> Age-specific rates per 100,000 residents

NOTE: Bars with hatch marks indicate the reference group

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

For 2017-2021 combined, for infants less than 1 year old, the all-cause mortality rate per 100,000 Asian (368.8), Black (1,018.0), and Latinx residents (408.1) was higher than the rate for White residents (329.2).

Among residents between 1-17 years, there were no significant differences in the all-cause mortality rate per 100,000 residents. Note: the all-cause mortality rate is very low and not visible in this chart.

For ages 18-24 years, the all-cause mortality rate for Black residents (101.4) and Latinx residents (47.8) was higher compared the rate for White residents (14.1).

For ages 25-44 years, the all-cause mortality rate for Black residents (244.8) and Latinx residents (166.7) was higher compared to the rate for White residents (82.3).

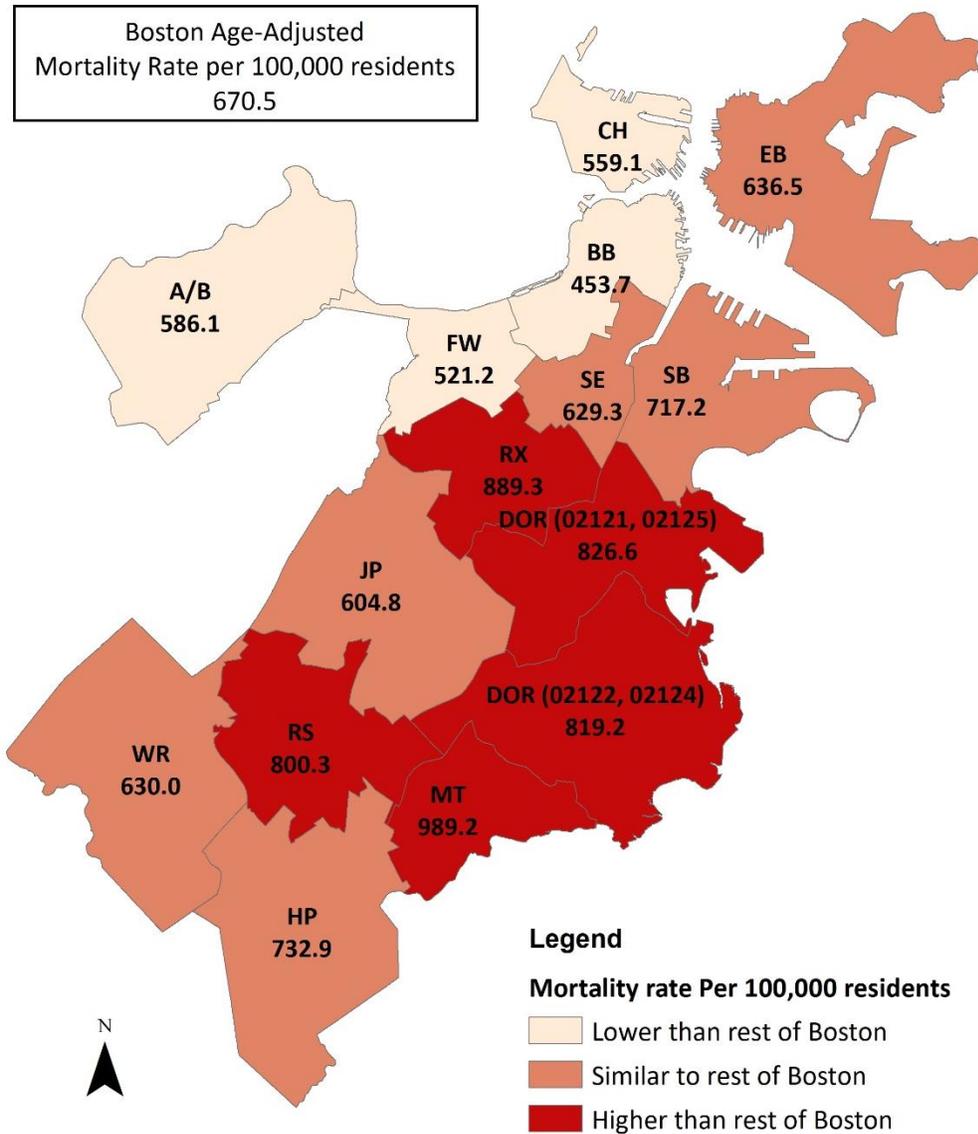


For ages 45-54 years, the all-cause mortality for Black residents (598.0) was higher compared to the rate for White residents (356.9). The rate for Latinx residents (322.3) was lower compared to the rate for White residents.

For 55-64 years, the all-cause mortality rate for Asian residents (381.1) and Latinx residents (704.9) was lower compared to the rate for White residents (807.7). The rate for Black residents (1,342.0) was higher compared to the rate for White residents.

For ages 65+ years, the all-cause mortality for Asian (2,592.0) and Latinx residents (2,687.0) was lower compared to the rate for White residents (4,256.0). The rate for Black residents (4,895.0) was higher compared to the rate for White residents.

**Figure 9. Age-Adjusted All-Cause Mortality by Neighborhood, 2021**



DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

In 2021, the age-adjusted all-cause mortality rate was higher in Dorchester (02121, 02125), Dorchester (02122, 02124), Mattapan, Roxbury, and Roslindale when compared with the rest of Boston. The rate was lower in Allston/Brighton, the Back Bay, Charlestown, Fenway when compared with the rest of Boston.

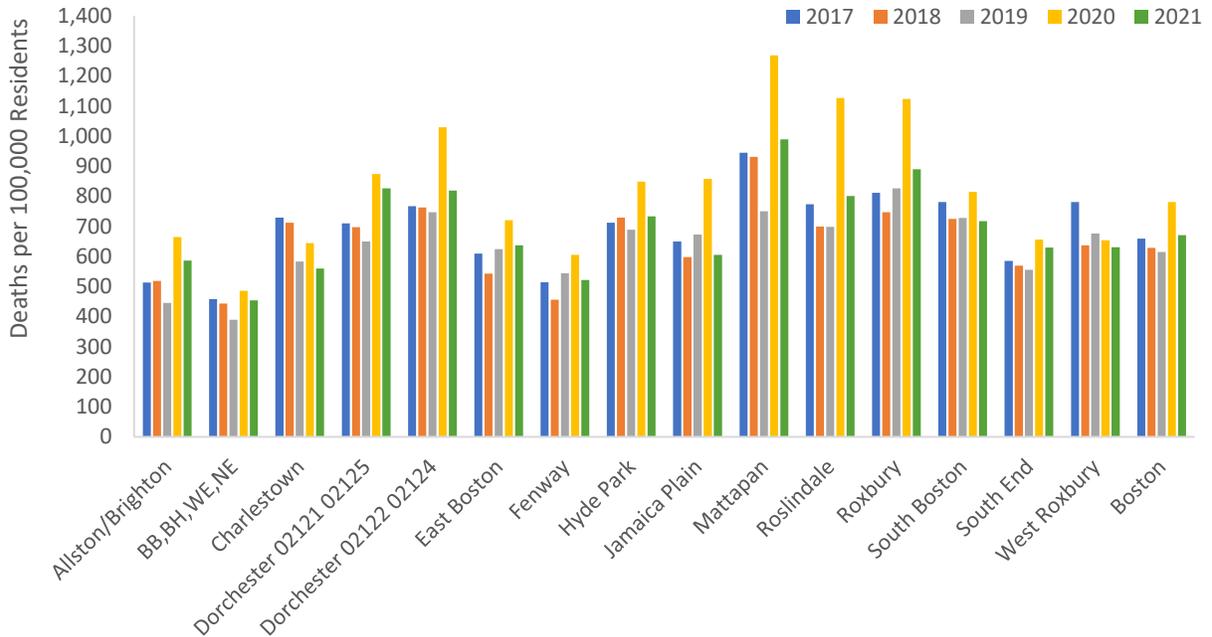
**Table 6. Age-Adjusted All-Cause Mortality, Ranked in Descending Order, 2021**

<b>Neighborhood, Associated ZIP Code(s)</b>	<b>Age-Adjusted Mortality Rate</b>
Mattapan (MT), 02126	989.2
Roxbury (RX), 02119, 02120	889.3
Dorchester (DOR), 02121, 02125	826.6
Dorchester (DOR) 02122, 02124	819.2
Roslindale (RS), 02131	800.3
Hyde Park (HP), 02136	732.9
South Boston (SB), 02127, 02210	717.2
East Boston (EB), 02128	636.5
West Roxbury (WR), 02132	630.0
South End (SE), 02111, 02118	629.3
Jamaica Plain (JP), 02130	604.8
Allston/Brighton (AB), 02134, 02135, 02163	586.1
Charlestown (CH), 02129	559.1
Fenway (FW), 02115, 02215	521.1
Back Bay, Downtown, Beacon Hill, North End, West End (BB), 02108-02110, 02113-02114, 02116, 02199	453.7

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

In 2021, the age-adjusted mortality rates in Mattapan (989.2) was more than twice that of the lowest rates in Back Bay, Downtown, Beacon Hill, North End, West End combined (453.7).

**Figure 10. All-Cause Mortality<sup>†</sup> by Neighborhood, 2017-2021**



<sup>†</sup> Age-adjusted rates per 100,000 residents

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

From 2017-2021, the age-adjusted all-cause mortality rate per 100,000 residents increased by 24.0% for Allston/Brighton, 24.5% for Dorchester 02121 02125, 19.7% for Dorchester 02122 02124, 19.2% for Mattapan, and 27.5% for Roxbury. In contrast, all-cause mortality rate per 100,000 residents decreased by 22.3% for Charlestown.

In 2020, during the first year of the COVID-19 pandemic, the death rate in Mattapan was the highest across all neighborhoods. In 2020, death rates were also high in Roxbury, Roslindale and Dorchester 02122, 02124.



**Table 7. Leading Causes of Mortality by Year**

Rank	2017	2018	2019	2020	2021
1	Cancer, 852 (143.2)	Cancer, 921 (153.5)	Cancer 770 (125.5)	COVID-19 841 (135.8)	Cancer 796 (126.3)
2	Heart disease, 753 (124.1)	Heart disease, 684 (111.9)	Heart disease 723 (116.0)	Cancer 806 (129.6)	Heart disease 736 (115.8)
3	Accidents, 321 (49.7)	Accidents, 283 (45.1)	Accidents 311 (46.8)	Heart disease 735 (116.1)	Accidents 395 (58.6)
4	Cerebrovascular diseases, 165 (27.5)	Cerebrovascular diseases 155 (26.0)	Cerebrovascular diseases 169 (28.0)	Accidents 366 (55.2)	COVID-19 328 (52.4)
5	Chronic lower respiratory diseases, 159 (27.6)	Diabetes mellitus 135 (22.4)	Chronic lower respiratory diseases 140 (23.3)	Cerebrovascular diseases 174 (28.1)	Cerebrovascular diseases 183 (29.1)
Cause of death, count (Age-adjusted rate per 100,000 residents)					

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

From 2017-2019, cancer was the leading cause of death for all residents followed by heart disease, accidents (i.e., unintentional injury including drug overdose) and cerebrovascular diseases (which includes stroke).

Chronic lower respiratory diseases (2017 and 2019) and diabetes mellitus (2018) ranked fifth in the years preceding the pandemic.

In 2020, COVID-19 displaced cancer as the leading cause of death for all residents shifting cancer, heart disease, accidents and cerebrovascular diseases down one level.

In 2021, the pattern seen in pre-pandemic years returned. Cancer was once again the leading cause of death followed by heart disease and accidents with COVID-19 the fourth leading cause of death and cerebrovascular diseases the fifth.



**Table 8a. Leading Causes of Mortality by Year, Male Residents**

Rank	2017	2018	2019	2020	2021
1	Cancer 415 (168.2)	Cancer 455 (185.0)	Cancer 389 (155.6)	COVID-19 458 (188.5)	Cancer 407 (153.1)
2	Heart disease 380 (156.8)	Heart disease 365 (149.5)	Heart disease 383 (151.1)	Cancer 426 (163.8)	Heart disease 397 (151.5)
3	Accidents 232 (76.9)	Accidents 207 (72.1)	Accidents 225 (73.3)	Heart disease 392 (152.1)	Accidents 283 (90.3)
4	Cerebrovascular diseases 69 (29.7)	Diabetes mellitus 76 (29.4)	Cerebrovascular diseases 77 (33.3)	Accidents 274 (88.2)	COVID-19 168 (67.8)
5	Diabetes mellitus 69 (28.7)	Cerebrovascular diseases 75 (31.7)	Diabetes mellitus 70 (27.3)	Diabetes mellitus 75 (28.6)	Diabetes mellitus 87 (31.7)
Cause of death, count (Age-adjusted rate per 100,000 residents)					

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

Before the pandemic (2017-2019), cancer was the leading cause of death among male residents followed by heart disease, accidents and either cerebrovascular diseases or diabetes as the fourth or fifth leading causes of death.

In 2020, COVID-19 displaced cancer as the leading cause of death for male residents shifting cancer, heart disease, accidents and diabetes down one level.

In 2021, the pattern seen in pre-pandemic years returned. Cancer was once again the leading cause of death followed by heart disease and accidents with COVID-19 the fourth leading cause of death and diabetes the fifth.



**Table 8b. Leading Causes of Mortality by Year, Female Residents**

Rank	2017	2018	2019	2020	2021
1	Cancer 437 (127.0)	Cancer 466 (132.8)	Cancer 381 (107.4)	COVID-19 383 (100.8)	Cancer 389 (108.9)
2	Heart disease 373 (99.3)	Heart disease 319 (83.7)	Heart disease 340 (90.5)	Cancer 380 (106.6)	Heart disease 339 (88.6)
3	Cerebrovascular diseases 96 (25.1)	Cerebrovascular diseases 80 (21.8)	Cerebrovascular diseases 92 (24.1)	Heart disease 343 (89.0)	COVID-19 160 (43.5)
4	Chronic lower respiratory diseases 95 (27.7)	Accidents 76 (22.2)	Accidents 86 (23.8)	Cerebrovascular diseases 98 (25.5)	Accidents 112 (31.0)
5	Accidents 89 (25.0)	Alzheimer's disease 75 (18.8)	Chronic lower respiratory diseases 84 (23.3)	Accidents 92 (25.4)	Cerebrovascular diseases 100 (25.4)
Cause of death, count (Age-adjusted rate per 100,000 residents)					

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

As observed among males, with the exception of 2020, the first and second leading causes of death among females were cancer and heart disease (resp.). In comparison to males, among females, the third and fourth leading causes of death were reversed, with higher rates of cerebrovascular diseases than accidents up until 2021 when accidents exceeded cerebrovascular diseases.

In 2020, the first year of the pandemic, COVID-19 displaced cancer as the leading cause of death for female residents shifting cancer, heart disease, cerebrovascular diseases and accidents down one level.

In 2021, the pattern seen in pre-pandemic years returned with COVID-19 dropping down to the third leading cause of death among female residents.

Other fourth and fifth leading causes of mortality for female residents included chronic lower respiratory diseases and Alzheimer’s disease.



**Table 9. Leading Causes of Mortality by Race/Ethnicity, 2021**

Rank	Asian	Black	Latinx	White
1	Cancer 80 (102.9)	Cancer 228 (126.3)	Accidents 88 (76.8)	Cancer 394 (125.6)
2	Heart disease 53 (62.8)	Heart disease 211 (159.4)	Cancer 75 (95.7)	Heart disease 386 (117.6)
3	COVID-19 34 (42.3)	Accidents 114 (82.9)	Heart disease 65 (86.1)	Accidents 174 (57.7)
4	Cerebrovascular diseases 24 (29.0)	COVID-19 105 (81.8)	COVID-19 62 (80.5)	COVID-19 122 (37.3)
5	Nephritis/nephrosis 13 (16.6)§	Diabetes mellitus 68 (51.5)	Diabetes mellitus 22 (28.6)	Chronic lower respiratory diseases 78 (25.5)
Cause of death, count (Age-adjusted rate per 100,000 residents)				

§ Rates based on 20 or fewer cases and should be interpreted with caution

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

In 2021, cancer, accidents (i.e., unintentional injury including drug overdose), heart disease and COVID-19 were among the top three leading causes of mortality across all racial/ethnic groups presented.

In 2021, among Asian residents, cancer was the leading cause of death, followed by heart disease and then COVID-19. Among Black and White residents, cancer was the leading cause of death, followed by heart disease and accidents. Among Latinx residents, accidents were the leading cause of death, followed by cancer and heart disease.

In 2021, COVID-19 was the third leading cause of death among Asians and the fourth among Black, Latinx and White residents.

Fifth leading causes of mortality were nephritis/nephrosis for Asian residents, diabetes mellitus for Black and Latinx residents, and chronic lower respiratory diseases for White residents.



**Table 10a. Leading Causes of Mortality by Year, Asian Residents, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Cancer 61 (97.3)	Cancer 79 (121.5)	Cancer 63 (88.5)	Cancer 77 (101.0)	Cancer 80 (102.9)
2	Heart disease 30 (43.4)	Heart disease 43 (60.2)	Heart disease 41 (55.2)	COVID-19 76 (96.6)	Heart disease 53 (62.8)
3	Cerebrovascular diseases 22 (31.7)	Cerebrovascular diseases 21 (30.3)	Cerebrovascular diseases 17 (21.6)§	Heart disease 43 (55.4)	COVID-19 34 (42.3)
4	Accidents 11 (17.4)§	Accidents 12 (16.9)§	Nephritis/nephrosis 12 (15.9)§	Cerebrovascular diseases 18 (22.2)§	Cerebrovascular diseases 24 (29.0)
5	Nephritis/nephrosis 11 (16.8*)§	Hypertensive renal disease 10 (13.1)§	Accidents 9 (11.3)§	Accidents 12 (17.1)§	Nephritis/nephrosis 13 (16.6)§
Cause of death, count (Age-adjusted rate per 100,000 residents)					

§ Rates based on 20 or fewer cases and should be interpreted with caution

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

From 2017-2019, cancer was the leading cause of death for Asian residents followed by heart disease and then cerebrovascular diseases.

In 2020, the first year of the pandemic, COVID-19 displaced heart disease as the second leading cause of death shifting cerebrovascular diseases and accidents to fourth and fifth.

In 2021, heart disease was once again the second leading cause of death, with COVID-19 the third.

Fourth and fifth leading causes of mortality for Asian residents also included accidents (i.e., unintentional injury including drug overdose), hypertensive renal disease, and nephritis/nephrosis.



**Table 10b. Leading Causes of Mortality by Year, Black Residents, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Cancer 243 (192.6)	Cancer 244 (192.3)	Cancer 216 (164.2)	COVID-19 293 (238.1)	Cancer 228 (126.3)
2	Heart disease 195 (156.1)	Heart disease 199 (158.1)	Heart disease 204 (157.5)	Cancer 241 (182.9)	Heart disease 211 (159.4)
3	Accidents 78 (57.4)	Diabetes mellitus 52 (41.2)	Accidents 77 (56.2)	Heart disease 238 (184.2)	Accidents 114 (82.9)
4	Cerebrovascular diseases 59 (48.4)	Nephritis/nephrosis 50 (40.7)	Cerebrovascular diseases 62 (51.7)	Accidents 114 (82.7)	COVID-19 105 (81.8)
5	Diabetes mellitus 57 (45.7)	Accidents 48 (37.0)	Diabetes mellitus 52 (40.0)	Cerebrovascular diseases 66 (52.8)	Diabetes mellitus 68 (51.5)
Cause of death, count (Age-adjusted rate per 100,000 residents)					

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

With the exception of 2020, the first year of the pandemic, cancer and heart disease were the first and second leading causes of death among Black residents.

In 2020, COVID-19 became the leading cause of death, falling to the fourth leading cause of death in 2021.

Fourth and fifth leading causes of mortality for Black residents included accidents, cerebrovascular diseases, diabetes mellitus, and nephritis/nephrosis.



**Table 10c. Leading Causes of Mortality by Year, Latinx Residents, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Cancer 70 (91.9)	Cancer 73 (91.8)	Cancer 69 (95.7)	COVID-19 105 (143.5)	Accidents 88 (76.8)
2	Accidents 69 (67.1)	Accidents 57 (52.3)	Heart disease 55 (78.2)	Accidents 71 (60.4)	Cancer 75 (95.7)
3	Heart disease 61 (93.9)	Heart disease 51 (83.1)	Accidents 53 (45.9)	Cancer 68 (86.8)	Heart disease 65 (86.1)
4	Diabetes mellitus 19 (27.8*)§	Diabetes mellitus 27 (39.0)	Diabetes mellitus 19 (29.5)§	Heart disease 65 (86.1)	COVID-19 62 (80.5)
5	Cerebrovascular diseases 18 (29.6*)§	Homicide 15 (11.6)§	Alzheimer's disease 16 (30.0)§	Diabetes mellitus 23 (26.5)	Diabetes mellitus 22 (28.6)
Cause of death, count (Age-adjusted rate per 100,000 residents)					

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

With the exception of 2020, the first year of the COVID-19 pandemic, cancer, accidents and heart disease were the top three leading causes of death among Latinx residents.

Diabetes is consistently the third (2017-2019) or fourth (2020 and 2021) leading cause of death among Latinx residents.

Other fourth and fifth leading causes of mortality for Latinx residents included cerebrovascular diseases, homicide, Alzheimer’s disease and heart disease.

In 2021, accidents became the leading cause of death among Latinx residents.



**Table 10d. Leading Causes of Mortality by Year, White Residents, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Cancer 456 (148.6)	Cancer 509 (162.8)	Heart disease 413 (123.2)	Cancer 404 (129.3)	Cancer 394 (125.6)
2	Heart disease 450 (136.6)	Heart disease 383 (116.2)	Cancer 402 (127.3)	Heart disease 383 (113.1)	Heart disease 386 (117.6)
3	Accidents 162 (53.3)	Accidents 159 (53.6)	Accidents 162 (52.3)	COVID-19 350 (104.3)	Accidents 174 (57.7)
4	Chronic lower respiratory diseases 118 (38.7)	Cerebrovascular diseases 88 (27.1)	Chronic lower respiratory diseases 91 (28.5)	Accidents 160 (54.5)	COVID-19 122 (37.3)
5	Alzheimer's disease 70 (18.5)	Alzheimer's disease 75 (21.0)	Cerebrovascular diseases 77 (22.1)	Chronic lower respiratory diseases 77 (24.7)	Chronic lower respiratory diseases 78 (25.5)
Cause of death, count (Age-adjusted rate per 100,000 residents)					

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

With the exception of 2020, the first year of the COVID-19 pandemic, the top three leading causes of death among White residents were cancer, heart disease and accidents.

In 2020, COVID-19 displaced accidents as the third leading cause of death among White residents.

In 2021, COVID-19 fell to the fourth leading cause of death.

In 2021, cancer, heart disease, and accidents were again the top three causes of death among White residents.

Other fourth and fifth leading causes of mortality for White residents included chronic lower respiratory diseases, cerebrovascular diseases and Alzheimer’s disease.



**Table 11a. Leading Causes of Premature Mortality by Race/Ethnicity and Sex (Male), 2021**

Male residents				
Rank	Asian	Black	Latinx	White
1	Cancer 47 (140.5)	Cancer 115 (221.8)	Accidents 68 (132.5)	Heart disease 210 (158.8)
2	Heart disease 27 (73.9)	Heart disease 113 (203.1)	Cancer 40 (116.0)	Cancer 197 (144.1)
3	COVID-19 20 (56.8)§	Accidents 80 (132.1)	COVID-19 37 (136.3)	Accidents 119 (80.5)
4	Cerebrovascular diseases 8 (22.1)§	COVID-19 44 (90.2)	Heart disease 35 (117.3)	COVID-19 67 (53.5)
5	Nephritis/ Nephrosis 8 (23.9)§	Diabetes mellitus 36 (65.7)	Diabetes mellitus 14 (39.9)§	Chronic lower respiratory diseases 41 (31.4)
Cause of death, count (Age-adjusted rate per 100,000 residents)				

§ Rates based on 20 or fewer cases and should be interpreted with caution

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

In 2021, cancer was the leading cause of death for Asian and Black male residents followed by heart disease. While the leading cause of death among Latinx residents was accidents and among White residents was heart disease, cancer was the second leading cause of death for both Latinx and White residents.

Among male residents, COVID-19 was either the third (Asian and LatinX residents) or fourth (Black and White residents) leading cause of death in 2021.

The fifth leading cause of death among Black and Latinx male residents was diabetes. Among Asian male residents the fifth leading cause of death was nephritis/nephrosis. Among White male residents Chronic lower respiratory diseases were the fifth leading cause of death.



**Table 11b. Leading Causes of Premature Mortality by Race/Ethnicity and Sex (Female), 2021**

Female residents				
Rank	Asian	Black	Latinx	White
1	Cancer 33 (74.4)	Cancer 113 (144.6)	Cancer 35 (78.9)	Cancer 197 (116.7)
2	Heart disease 26 (53.5)	Heart disease 98 (124.9)	Heart disease 30 (70.6)	Heart disease 176 (86.6)
3	Cerebrovascular diseases 16 (34.2)§	COVID-19 61 (78.5)	COVID-19 25 (53.6)	Accidents 55 (36.6)
4	COVID-19 14 (30.9)§	Accidents 34 (43.0)	Accidents 20 (32.4)§	COVID-19 55 (27.0)
5	Nephritis/ Nephrosis 5 (11.0)§	Diabetes mellitus 32 (40.7)	Alzheimers disease 11 (28.0)§	Cerebrovascular diseases 42 (18.7)
Cause of death, count (Age-adjusted rate per 100,000 residents)				

§ Rates based on 20 or fewer cases and should be interpreted with caution

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

In all female residents in 2021, cancer followed by heart disease were the top two leading causes of death.

COVID-19 was either the third (Black and Latinx) or fourth (Asian and White) leading cause of death among female residents.

Accidents were the third leading cause of death among White and the fourth leading cause among Black and Latinx female residents. Accidents were not in the top five leading causes of death for Asian female residents.

In 2021, the fifth leading cause of mortality among Asian, Black, Latinx, and White female residents were nephritis/nephrosis, diabetes mellitus, Alzheimer’s disease and cerebrovascular diseases, respectively.



**Table 12a. Leading Causes of Mortality by Year, Asian Male Residents, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Cancer 37 (129.5)§	Cancer 39 (133.2)	Cancer 34 (110.3)	COVID-19 50 (238.1)	Cancer 47 (140.5)
2	Heart disease 16 (55.5)§	Heart disease 24 (81.9)	Heart disease 22 (72.1)	Cancer 42 (83.2)	Heart disease 27 (73.9)
3	Cerebrovascular diseases 9 (30.5)§	Cerebrovascular diseases 13 (43.7)§	Cerebrovascular diseases 10 (31.2)§	Heart disease 22 (183.5)	COVID-19 20 (56.8)§
4	Accidents 6 (22.8)§	Accidents 8 (25.8)§	Nephritis/Nephrosis 8 (25.5)§	Accidents 10 (59.5)§	Cerebrovascular diseases 8 (22.1)§
5	Chronic lower respiratory diseases 6 (21.1)§	Hypertensive renal disease 5 (15.2)§	Accidents 7 (19.8)§	Chronic lower respiratory diseases 8 (24.7)§	Nephritis/Nephrosis 8 (23.9)§

§ Rates based on 20 or fewer cases and should be interpreted with caution

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

With the exception of 2020, the first year in the COVID-19 pandemic, cancer followed by heart disease and cerebrovascular diseases were the top three leading cause of death among Asian male residents.

In 2020, COVID-19 displaced cancer as the leading cause of death for Asian male residents.

In 2021, COVID-19 fell to third leading cause of death. Cancer, followed by heart disease, was again the leading cause of death for Asian male residents.

Fourth and fifth leading causes of mortality for Asian male residents included accidents (i.e., unintentional injury including drug overdose), chronic lower respiratory diseases, hypertensive renal disease, nephritis/nephrosis, and cerebrovascular diseases.



**Table 12b. Leading Causes of Mortality by Year, Asian Female Residents, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Cancer 24 (72.0)	Cancer 40 (114.0)	Cancer 29 (72.4)	Cancer 35 (82.8)	Cancer 33 (74.4)
2	Heart disease 14 (34.0)§	Heart disease 19 (42.9)§	Heart disease 19 (42.0)§	COVID-19 26 (53.9)	Heart disease 26 (53.5)
3	Cerebrovascular diseases 13 (32.4)§	Cerebrovascular diseases 8 (20.1)§	Cerebrovascular diseases 7 (14.1)§	Heart disease 21 (45.5)	Cerebrovascular diseases 16 (34.2)§
4	Nephritis/Nephrosis 7 (19.4)§	Alzheimer's disease 5 (11.2)§	Alzheimer's disease 5 (11.3)§	Cerebrovascular diseases 11 (24.1)§	COVID-19 14 (30.9)§
5	Accidents 5 (12.4)§	Hypertensive renal disease 5 (11.2)§	Hypertensive renal disease 5 (11.2)§	Septicemia 6 (13.9)§	Nephritis/Nephrosis 5 (11.0)§
Cause of death, count (Age-adjusted rate per 100,000 residents)					

§ Rates based on 20 or fewer cases and should be interpreted with caution

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

In most years, cancer followed by heart disease and cerebrovascular diseases were the top three leading cause of death for Asian female residents.

In 2020, COVID-19 displaced heart disease as the second leading cause of death for Asian female residents. In that year cerebrovascular diseases and septicemia were the fourth and fifth top causes of death.

In 2021, COVID-19 dropped to the fourth leading cause of death among Asian female residents.

Other fourth and fifth leading causes of mortality for Asian female residents included nephritis/nephrosis, accidents, Alzheimer’s disease, and hypertensive renal disease.



**Table 12c. Leading Causes of Mortality by Year, Black Male Residents, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Cancer 126 (225.9)	Cancer 112 (226.2)	Cancer 109 (217.4)	COVID-19 155 (238.1)	Cancer 115 (221.8)
2	Heart disease 90 (185.5)	Heart disease 97 (188.8)	Heart disease 107 (208.6)	Heart disease 125 (183.5)	Heart disease 113 (203.1)
3	Accidents 52 (84.9)	Accidents 36 (65.9)	Accidents 55 (95.0)	Cancer 114 (83.2)	Accidents 80 (132.1)
4	Homicide 35 (53.1)	Diabetes mellitus 33 (62.2)	Diabetes mellitus 25 (48.8)	Accidents 87 (59.5)	COVID-19 44 (90.2)
5	Cerebrovascular diseases 27 (54.8)	Homicide 32 (45.7)	Cerebrovascular diseases 23 (50.0)	Homicide 34 (11.6)	Diabetes mellitus 36 (65.7)
Cause of death, count (Age-adjusted rate per 100,000 residents)					

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

With the exception of 2020, the first year of the pandemic, cancer followed by heart disease, and accidents were the top three causes of death among Black male residents.

In 2020, COVID-19 became the leading cause of death and the rates of mortality due to heart disease surpassed cancer among Black male residents.

In 2021, COVID-19 fell to fourth leading cause and cancer returned to the leading cause of death followed by heart disease and accidents.

Fourth and fifth leading causes of mortality for Black male residents included homicide, cerebrovascular diseases, diabetes mellitus, accidents and COVID-19.



**Table 12d. Leading Causes of Mortality by Year, Black Female Residents, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Cancer 117 (153.2)	Cancer 132 (170.6)	Cancer 107 (135.8)	COVID-19 138 (178.2)	Cancer 113 (144.6)
2	Heart disease 105 (134.8)	Heart disease 102 (132.0)	Heart disease 97 (124.9)	Cancer 127 (163.6)	Heart disease 98 (124.9)
3	Diabetes mellitus 34 (44.9)	Nephritis/Nephrosis 25 (34.2)	Cerebrovascular diseases 39 (51.4)	Heart disease 113 (143.9)	COVID-19 61 (78.5)
4	Cerebrovascular diseases 32 (41.9)	Chronic lower respiratory diseases 23 (30.1)	Diabetes mellitus 27 (34.6)	Cerebrovascular diseases 41 (51.5)	Accidents 34 (43.0)
5	Accidents 26 (33.9)	Diabetes mellitus 19 (25.5)§	Chronic lower respiratory diseases 25 (32.4)	Accidents 27 (35.5)	Diabetes mellitus 32 (40.7)
Cause of death, count (Age-adjusted rate per 100,000 residents)					

§ Rates based on 20 or fewer cases and should be interpreted with caution

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

With the exception of 2020, the first year of the pandemic, cancer followed by heart disease were the top two causes of death among Black female residents.

In 2020, COVID-19 became the leading cause of death displacing cancer and moving heart disease to the third leading cause of mortality among Black female residents.

In 2021, COVID-19 fell to third and cancer returned to the top leading cause of death followed by heart disease, accidents and diabetes.

Other fourth and fifth leading causes of mortality for Black female residents included cerebrovascular diseases, chronic lower respiratory diseases, and accidents.



**Table 12e. Leading Causes of Mortality by Year, Latinx Male Residents, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Accidents 61 (131.3)	Accidents 45 (84.1)	Accidents 49 (98.5)	COVID-19 68 (246.5)	Accidents 68 (132.5)
2	Heart disease 36 (138.1)	Cancer 39 (123.7)	Heart disease 32 (109.2)	Accidents 56 (94.2)	Cancer 40 (116.0)
3	Cancer 32 (122.1)	Heart disease 26 (115.3)	Cancer 30 (103.7)	Cancer 41 (147.9)	COVID-19 37 (136.3)
4	Diabetes mellitus 13 (55.0)§	Diabetes mellitus 15 (42.2)§	Diabetes mellitus 11 (44.9)§	Heart disease 35 (102.6)	Heart disease 35 (117.3)
5	Homicide 10 (15.5)§	Homicide 14 (23.3)§	Cerebrovascular diseases 7 (27.3)§	Diabetes mellitus 15 (37.8)§	Diabetes mellitus 14 (39.9)§
Cause of death, count (Age-adjusted rate per 100,000 residents)					

§ Rates based on 20 or fewer cases and should be interpreted with caution

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

With the exception of 2020, when COVID-19 was the leading cause, accidents is the top leading cause of death among Latinx male residents. Cancer, heart disease and diabetes oscillate as the second, third or fourth leading causes of death.

In 2020, COVID-19 was the leading cause of death for Latinx male residents followed by accidents and then cancer.

In 2021, accidents were again the leading cause of death for Latinx male residents followed by cancer and COVID-19.

Fourth and fifth leading causes of death for Latinx male residents included diabetes mellitus, homicide, cerebrovascular diseases, and heart disease.



**Table 12f. Leading Causes of Mortality by Year, Latinx Female Residents, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Cancer 38 (79.4)	Cancer 34 (71.9)	Cancer 39 (90.3)	COVID-19 37 (85.8)	Cancer 35 (78.9)
2	Heart disease 25 (67.2)	Heart disease 25 (65.9)	Heart disease 23 (57.4)	Heart disease 30 (69.4)	Heart disease 30 (70.6)
3	Cerebrovascular diseases 11 (30.5)§	Accidents 12 (16.1)§	Alzheimer's disease 12 (33.3)§	Cancer 27 (54.1)	COVID-19 25 (53.6)
4	Accidents 8 (15.4)§	Diabetes mellitus 12 (32.2)§	Diabetes mellitus 8 (19.5)§	Accidents 15 (27.4)§	Accidents 20 (32.4)§
5	Diabetes mellitus 6 (14.1)§	Alzheimer's disease 7 (20.7)§	Influenza/Pneumonia 6 (12.0)§	Cerebrovascular diseases 10 (21.2)§	Alzheimer's disease 11 (28.0)§
Cause of death, count (Age-adjusted rate per 100,000 residents)					

§ Rates based on 20 or fewer cases and should be interpreted with caution

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

The top two leading causes of death among Latinx female residents are cancer and heart disease.

In 2020, in the first year of the pandemic, COVID-19 became the leading cause of death.

In 2021, COVID-19 fell to the third leading cause of death and cancer and heart disease returned to being the first and second leading causes of death among Latinx female residents.

Third, fourth and fifth leading causes of death among Latinx females included accidents, diabetes mellitus, Alzheimer’s disease, influenza/pneumonia, and cerebrovascular diseases.



**Table 12g. Leading Causes of Mortality by Year, White Male Residents, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Heart disease 233 (178.6)	Cancer 258 (198.6)	Heart disease 217 (86.1)	Cancer 220 (165.0)	Heart disease 210 (158.8)
2	Cancer 210 (159.6)	Heart disease 212 (164.5)	Cancer 206 (83.2)	Heart disease 208 (157.0)	Cancer 197 (144.1)
3	Accidents 112 (76.4)	Accidents 114 (81.5)	Accidents 106 (59.5)	COVID-19 182 (142.8)	Accidents 119 (80.5)
4	Chronic lower respiratory diseases 44 (35.1)	Chronic lower respiratory diseases 40 (32.6)	Cerebrovascular diseases 36 (29.0)	Accidents 118 (81.1)	COVID-19 67 (53.5)
5	Diabetes mellitus 28 (23.4)	Cerebrovascular diseases 37 (29.1)	Chronic lower respiratory diseases 36 (24.7)	Chronic lower respiratory diseases 37 (27.6)	Chronic lower respiratory diseases 41 (31.4)
Cause of death, count (Age-adjusted rate per 100,000 residents)					

NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

Throughout 2017 to 2021, cancer and heart disease alternated between being the first or second leading cause of death among White male residents.

With the exception of 2020, accidents were consistently the third leading cause of death. During this first year of the pandemic, COVID-19 displaced accidents as the third leading cause of death among White male residents.

Fourth and fifth leading causes of death among White male residents included chronic lower respiratory diseases, diabetes mellitus, cerebrovascular diseases, accidents, and COVID-19.



**Table 12h. Leading Causes of Mortality by Year, White Female Residents, 2017-2021**

Rank	2017	2018	2019	2020	2021
1	Cancer 246 (142.8)	Cancer 251 (140.9)	Cancer 196 (110.3)	Cancer 184 (102.3)	Cancer 197 (116.7)
2	Heart disease 217 (104.1)	Heart disease 171 (81.1)	Heart disease 196 (94.6)	Heart disease 175 (84.1)	Heart disease 176 (86.6)
3	Chronic lower respiratory diseases 74 (41.9)	Cerebrovascular diseases 51 (25.7)	Accidents 56 (33.3)	COVID-19 168 (81.0)	Accidents 55 (36.6)
4	Alzheimer's disease 51 (19.7)	Alzheimer's disease 50 (21.4)	Chronic lower respiratory diseases 55 (29.3)	Alzheimer's disease 50 (20.8)	COVID-19 55 (27.0)
5	Accidents 50 (30.0)	Accidents 45 (27.7)	Alzheimer's disease 49 (21.3)	Accidents 42 (27.9)	Cerebrovascular diseases 42 (18.7)
Cause of death, count (Age-adjusted rate per 100,000 residents)					

NOTE: Rank is based on number of deaths. Both counts and rates(in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

Throughout 2017 to 2021, cancer and heart disease were the first and second leading cause of death among White female residents.

In 2020, COVID-19 became the third leading cause of death among White female residents, followed by Alzheimer’s disease and accidents.

In 2021, COVID-19 fell to fourth leading cause of death among White female residents.

In 2017-2020 Alzheimers Disease and accidents were both in the top five leading cause of death ranking as third, fourth or fifth among White female residents.

Other fourth and fifth leading causes of death among White female residents included chronic lower respiratory diseases or cerebrovascular diseases.



**Table 13. Leading Causes of Mortality by Age, 2017-2021 Combined**

Rank	Ages <1	Ages 1-17	Ages 18-24	Ages 25-44	Ages 45-54	Ages 55-64	Ages 65+
1	Perinatal, 97 (302.5)	Homicide, 14 (2.9)§	Accidents, 64 (12.1)	Accidents, 581 (46.9)	Accidents, 314 (85.6)	Cancer, 731 (223.2)	Cancer, 2,998 (791.9)
2	Congenital malformations, deformations and chromosomal abnormalities, 29 (90.4)	Cancer, 12 (2.5)§	Homicide, 59 (11.2)	Cancer, 135 (10.9)	Cancer, 263 (71.7)	Heart disease, 516 (157.6)	Heart disease, 2,794 (738.0)
3	‡	Congenital malformations, deformations and chromosomal abnormalities, 7 (1.5)§	Suicide, 18 (3.4)§	Heart disease, 131 (10.6)	Heart disease, 182 (49.6)	Accidents, 337 (102.9)	COVID-19, 999 (263.9)
4	‡	‡	Cancer, 6 (1.1)§	Homicide, 122 (9.9)	Chronic liver disease, 59 (16.1)	Diabetes mellitus, 120 (36.6)	Cerebrovascular diseases, 721 (190.4)
5	‡	‡	Heart disease, 5 (0.9)§	Suicide, 97 (7.8)	Diabetes mellitus, 53 (14.5)	COVID-19, 110 (33.6)	Chronic lower respiratory diseases 550 (145.3)
Cause of death, count (Rate-year average annual rate per 100,000 residents)							

‡ Rates not presented due to small number of cases

§ Rates based on 20 or fewer cases and should be interpreted with caution

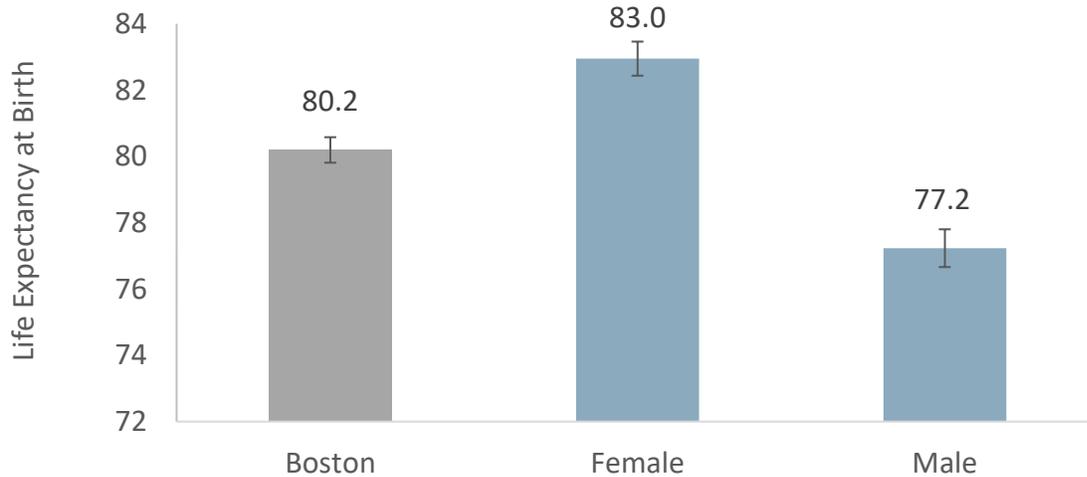
NOTE: Rank is based on number of deaths. Both counts and rates (in brackets) are presented.

DATA SOURCE: Boston resident deaths, Massachusetts Department of Public Health

For 2017-2021, among residents ages less than 1 year, conditions originating in the perinatal period were the leading cause of death, followed by congenital malformations. Among residents ages 1-17 years, homicide was the leading cause of death, followed by cancer and congenital malformations. Among residents ages 18-24 years, accidents were the leading cause of death, followed by homicide and then suicide. Among residents ages 25-44 years, accidents were the leading cause of death, followed by cancer and then heart disease. Among residents ages 45-54 years, accidents were the leading cause of death, followed by cancer and then heart disease. Among residents ages 55-64 years, cancer was the leading cause of death, followed by heart disease and then accidents. Among residents ages 65 years and over, cancer was the leading cause of death, followed by heart disease and then COVID-19.

### SECTION 3. PROVISIONAL LIFE EXPECTANCY

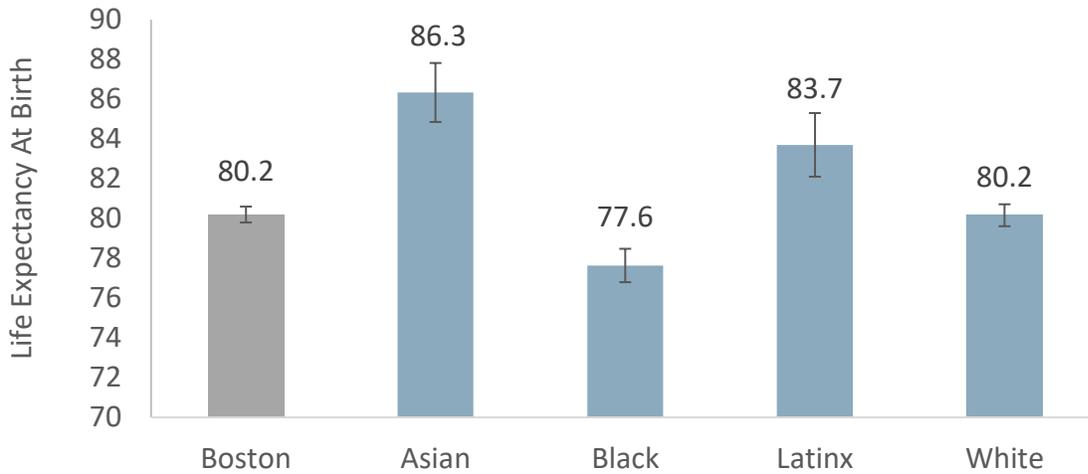
**Figure 11. Life Expectancy at Birth by Sex, 2017-2021**



DATA SOURCE: 1) Boston resident deaths, Massachusetts Department of Public Health; 2) American Community Survey 5-Year Population Estimates (2017-2021)

For 2017-2021, the life expectancy at birth for Boston residents was 80.2 years. The life expectancy at birth for female residents was 83.0 years and the life expectancy at birth for male residents was 77.2 years.

**Figure 12. Life Expectancy at Birth by Race/Ethnicity, 2017-2021**



DATA SOURCE: 1) Boston resident deaths, Massachusetts Department of Public Health; 2) American Community Survey 5-Year Population Estimates (2017-2021)

For 2017-2021, the life expectancy at birth was 86.3 years for Asian residents, 77.6 years for Black residents, 83.7 years for Latinx residents, and 80.2 years for White residents.

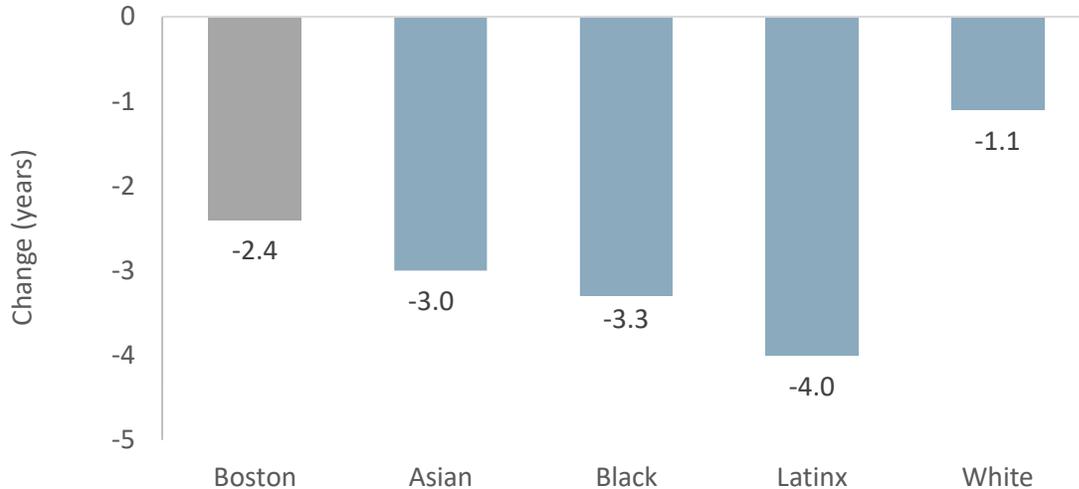
**Figure 13. Change in Life Expectancy by Sex for Combined Years of 2020-2021 from Combined Years of 2018-2019**



DATA SOURCE: 1) Boston resident deaths, Massachusetts Department of Public Health; 2) American Community Survey 5-Year Population Estimates (2017-2021)

A comparison of life expectancy in Boston, in the two years before the COVID-19 pandemic (2018-2019) and the first two years of the pandemic (2020-2021) reveals an overall loss of 2.4 years in life expectancy. The decrease in life expectancy was greater among males (-2.8 years) than females (-1.7 years).

**Figure 14. Change in Life Expectancy by Race/Ethnicity for Combined Years of 2020-2021 from Previous Combined Years of 2018-2019**



Comparison of life expectancy in Boston, in the two years before the COVID-19 pandemic (2018-2019) and the first two years of the pandemic (2020-2021) reveals disparities by race/ethnicity.

Decreases in life expectancy were greatest among Latinx residents (-4.0 years), followed by Black residents (-3.3 years) and Asian residents (-3.0 years). White residents had the smallest decrease in life expectancy (-1.1 years).

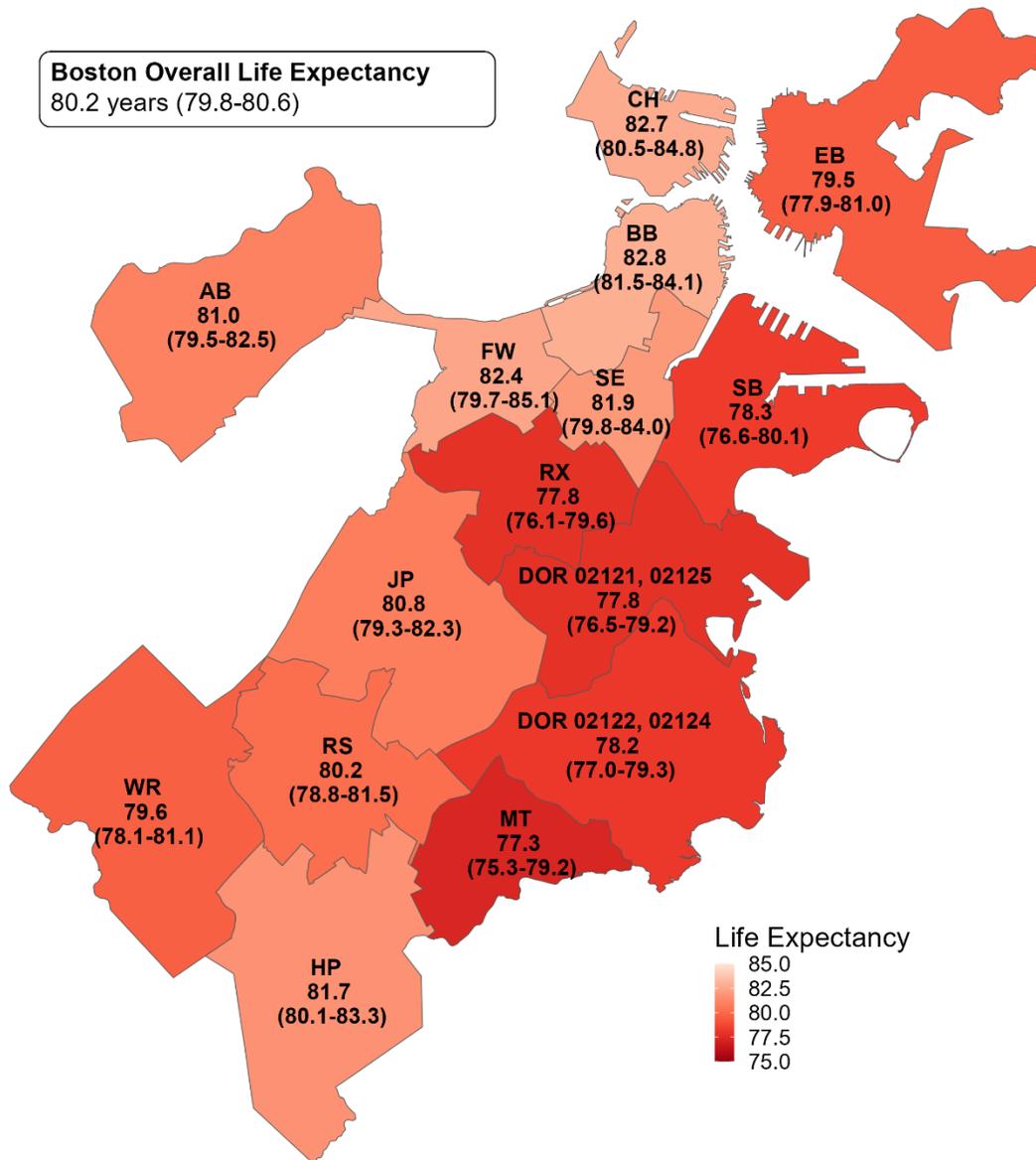


**Table 14. Life Expectancy by Age Group, City of Boston Overall (2017 - 2021)**

<b>Age Group</b>	<b>Life Expectancy</b>	<b>95% CI</b>
0 Years	80.2	(79.8-80.5)
1-4 Years	79.6	(79.2-79.9)
5-9 Years	75.7	(75.3-76.0)
10-14 Years	70.7	(70.3-71.0)
15-19 Years	65.7	(65.3-66.0)
20-24 Years	60.8	(60.4-61.1)
25-29 Years	55.9	(55.5-56.2)
30-34 Years	51.1	(50.7-51.4)
35-39 Years	46.3	(45.9-46.6)
40-44 Years	41.7	(41.3-42.0)
45-49 Years	37.1	(36.7-37.4)
50-54 Years	32.6	(32.3-32.9)
55-59 Years	28.3	(28.0-28.6)
60-64 Years	24.2	(23.9-24.5)
65-69 Years	20.3	(19.9-20.5)
70-74 Years	16.5	(16.2-16.7)
75-79 Years	12.8	(12.5-13.1)
80-84 Years	9.7	(9.4-9.9)
85-89 Years	7.3	(6.9-7.5)
90 or More Years	4.2	(3.9-4.5)

DATA SOURCE: 1) Boston resident deaths, Massachusetts Department of Public Health; 2) American Community Survey 5-Year Population Estimates (2017-2021)

**Figure 15. Life Expectancy at Birth, 2017-2021**



DATA SOURCE: 1) Boston resident deaths, Massachusetts Department of Public Health; 2) American Community Survey 5-Year Population Estimates (2017-2021)

**Table 15. Life Expectancy at Birth by Neighborhood, Ranked in Descending Order, 2017-2021**

<b>Neighborhood, associated ZIP code(s)</b>	<b>Life Expectancy</b>	<b>95% CI</b>
Back Bay, Downtown, Beacon Hill, North End, West End (BB), 02108-02110, 02113-02114, 02116, 02199	82.8	(81.5 - 84.1)
Charlestown (CH), 02129	82.7	(80.5 - 84.8)
Fenway (FW), 02115, 02215	82.4	(79.7 - 85.1)
South End (SE), 02111, 02118	81.9	(79.8 - 84.0)
Hyde Park (HP), 02136	81.7	(80.1 - 83.3)
Allston/Brighton (AB), 02134, 02135, 02163	81.0	(79.5 - 82.5)
Jamaica Plain (JP), 02130	80.8	(79.2 - 82.3)
Roslindale (RS), 02131	80.2	(78.8 - 81.5)
West Roxbury (WR), 02132	79.6	(78.1 - 81.1)
East Boston (EB), 02128	79.5	(77.9 - 81.0)
South Boston (SB), 02127, 02210	78.3	(76.6 - 80.1)
Dorchester (DOR) 02122, 02124	78.2	(77.0 - 79.3)
Dorchester (DOR), 02121, 02125	77.8	(76.5 - 79.1)
Roxbury (RX), 02119, 02120	77.8	(76.1- 79.6)
Mattapan (MT), 02126	77.3	(75.3 - 79.2)

DATA SOURCE: 1) Boston resident deaths, Massachusetts Department of Public Health; 2) American Community Survey 5-Year Population Estimates (2017 - 2021)

In 2017-2021, of all Boston neighborhoods, the Back Bay, (including Back Bay, Downtown, Beacon Hill, North End, West End) and Charlestown neighborhoods had the longest life expectancies of 82.8 and 82.7 respectively. The neighborhoods of Mattapan and Roxbury had the shortest life expectancies of 77.3 and 77.8, respectively.



## Life Expectancy at Birth by Census Tract

Determining life expectancy at the census tract (CT) level is critical to understanding the impact of local context, such as area-level socioeconomic status, on health outcomes. Life expectancy data aggregated below the neighborhood or ZIP code level (i.e. CT or census block group levels) also provide greater precision and geographic granularity to ensure more equitable resource allocation among communities (20,21).

Previous estimates of life expectancy in Boston (2003-2007) at the CT-level revealed significant differences between CTs with a 33-year disparity between the CT with the highest life expectancy (located in Back Bay, 91.9 years) and lowest life expectancy (located in Roxbury, 58.9 years) (19). Area-level racial and socioeconomic demographics also differed widely between the highest and lowest life expectancy CTs. The CT with the lowest life expectancy was characterized by lower median household income and a larger proportion of Black/African-American residents than the CT with the highest life expectancy in Back Bay.

BPHC is currently conducting a detailed analysis of life expectancy by CT in Boston, 2015-2021. A significant disparity in life expectancy continues to be noted in CTs located in Roxbury versus Back Bay. The CT with the lowest life expectancy (68.8 years) is in Roxbury, and the CT with one of the highest life expectancies in Boston (91.6 years) is in the Back Bay. While the difference between highest and lowest life expectancy appears to have decreased over time, many structural, social, and environmental factors continue to contribute to a 22.8-year disparity in life expectancy across Boston (Table 16).

A more comprehensive life expectancy profile will be available later in 2023.



**Table 16. Life Expectancy by Census Tract, 2015-2021**

	<b>Census Tract 803 (Roxbury)</b>	<b>Census Tract 107.02 (Back Bay)</b>
Life Expectancy (years)*	68.8	91.6
Census Tract Street Boundaries	North: Albany St/Dudley St South: Moreland/Vine St West: Warren St East: Hampden St	North: Marlborough St South: St. James Ave West: Exeter St East: Arlington St
Median Household Income (in 2021 inflation adjusted dollars)	\$41,211	\$141,250
Educational Attainment (%)**	43.7	90.8
Non-Hispanic Black or African-American alone (%)	48.4	1.3
Latinx or Hispanic (%)	31.5	8.0
Non-Hispanic White alone (%)	13.0	81.6
Non-Hispanic Asian, Native Hawaiian and Pacific Islander alone (%)	3.3	5.3
Other (%)	3.9	3.8

\*Life expectancy at birth calculated by BPHC based on 2015-2021 death data and 2017-2021 American Community Survey 5-Year population estimates

\*\*Percent population aged 25 or older with a college degree or more

DATA SOURCE: US Census Bureau, 2017-2021 American Community Survey 5-Year Estimates, BPDA GIS, BPDA Research Division Analysis



## SUMMARY

### Premature Mortality (<65 years of age)

Between 2017 and 2021, the age-adjusted rate of premature mortality (defined as deaths among residents under 65 years of age) increased by 12% overall, and 37% among Black residents specifically.

In 2021, premature mortality was lower among female residents compared to males, and lower among Asian residents and higher among Black residents, compared to White residents. These differences were consistent across sexes; among males, Latinx male residents also had a higher rate of premature mortality compared to White male residents.

Cancer was the leading cause of premature mortality for Boston residents in 2017 and 2018; in 2019-2021, the leading cause of premature mortality was accidents (i.e., unintentional injury including unintentional drug overdose). Heart disease, COVID-19, homicide, suicide, diabetes, and chronic liver disease also ranked among the most common causes of premature mortality between 2017 and 2021.

Among male residents, accidents were consistently the leading cause of premature mortality, while among female residents, the leading cause was cancer. By racial/ethnic group, cancer was consistently the leading cause of premature mortality among Asian and Black residents, while accidents were consistently the leading cause of premature mortality among Latinx and White residents.

During 2017-2021, the premature mortality rate was higher for Dorchester (02121, 02125), Dorchester (02122, 02124), Mattapan, Roxbury, and the South End; the rate was lower for Allston/Brighton, the Back Bay, Charlestown, East Boston, Fenway, Jamaica Plain, Roslindale, South Boston, and West Roxbury.

### Mortality (All-Ages)

Between 2017 and 2021, the age-adjusted all-cause mortality rate (overall rate of deaths in Boston) increased by 11% in Boston overall, and by 29% among Black residents and 30% among Latinx residents.

In 2021, the all-cause mortality rate was lower among Asian residents and higher among Black residents, as compared to White residents. These differences were consistent across sexes.

From 2017-2021, the all-cause mortality rate increased for Allston-Brighton Dorchester, Mattapan, and Roxbury and decreased for Charlestown.



Between 2017 and 2021, the leading cause of mortality in Boston was cancer for all years except 2020, for which the leading cause of death was COVID-19. Similarly, heart disease was consistently the second most common cause of death and accidents (which includes unintentional drug overdoses) were consistently the third most common except in 2020, when COVID pushed them to third and fourth, respectively. In 2021, though COVID was still among the top five most common causes of death, it was no longer the leading cause. Other common causes of death included cerebrovascular diseases, chronic lower respiratory diseases, and diabetes mellitus.

In 2021, cancer was the leading cause of death among all racial ethnic groups except Latinx residents, for whom accidents were the leading cause of death. For Asian residents specifically, nephritis and nephrosis factored in among leading causes of death; for Black and Latinx residents, the leading causes of death included diabetes mellitus; for White residents, chronic lower respiratory diseases factored in among leading causes of death.

### **Life Expectancy**

The life expectancy at birth for all Boston residents was 80.2 years for 2017-2021. Life expectancy varied across sex, race/ethnicity and neighborhood: by six years across sex (83 years for females vs. 77 years for males), by nine years across race/ethnicity (86 years for Asian residents vs. 78 years for Black residents) and by six years across Boston neighborhoods (83 years for Back Bay/Beacon Hill vs. 77 years for Mattapan). Comparison of life expectancy before and during COVID-19 help describe the impact COVID-19 had on population mortality. As could be expected, life expectancy decreased during the pandemic, but the magnitude of decrease varied by sex (2 years for females vs. 3 years for males) and race/ethnicity (1 year for White residents, 3 years for Asian and Black residents, and 4 years for Latinx residents).

BPHC is currently undertaking an extensive study to better understand geographical differences in life expectancy at the census tract-level and will release study results later in 2023.



## GLOSSARY OF STATISTICAL TERMS

**Age-Adjusted Rate (AAR):** Age-adjustment is a statistical process applied to rates of disease and death which allows populations or groups with different age structures to be compared. The occurrence of disease and death is often associated with age, and the age distribution between populations may differ considerably. Thus, AARs are helpful when comparing rates over time and between groups or populations. An AAR is derived by: 1) calculating the age-specific rates (ASRs) across all age groups 2) multiplying by age-specific weights that come from a proportion of the 2000 US standard population within each age group 3) summing the adjusted age-specific rates. In this report, AARs are used for the presentation of diabetes hospitalizations and mortality. All AARs are based on a standard population distribution that covers all ages.

**Rates:** A rate is a measure of a type of event, disease, or condition occurring among a population per unit(s) of time, for instance, the number of deaths due to diabetes per 100,000 population for a given year or across multiple years. Two types of rates are presented in this report: crude rates and age-adjusted rates (AARs). In this report, death rates are based on the primary cause only. The population denominators used for calculating rates is derived through interpolation or extrapolation using data from the 2020 and 2010 US Census. Linear interpolation/extrapolation involves the calculation of an average annual percent change for use in estimating population denominators. Linear interpolation is preferred to using a single year of US Census data when calculating rates for intercensal years.

**Statistical Significance:** An attribute of data based on statistical testing. A statistical test examines differences between rates or percentages to help determine if that observed difference reflects a true difference in the actual population experience, as opposed to one observed simply due to chance. Statistical significance means that an observed difference is most likely true; it does not mean that the difference is necessarily clinically meaningful or important.



## DATA SOURCES

**Boston Resident Deaths, Registry of Vital Records and Statistics, Office of Data Management and Outcomes Assessment, Massachusetts Department of Public Health:** Death data used by the Boston Public Health Commission pertains only to Boston residents. This report used death data from 2015 to 2021. Death records are completed with the assistance of an informant, typically a family member or funeral director, which may result in errors (for example, in race/ethnicity reporting) that would not occur in self-reported data.

**American Community Survey, US Census Bureau:** The American Community Survey (ACS) uses a sample population to provide information about demographics, housing, and socioeconomic characteristics of communities. People who live in households, students, and those in institutions or other group quarters (e.g. jails, college dormitories, or other group quarters (e.g. jails, college dormitories and nursing homes) are sampled.



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